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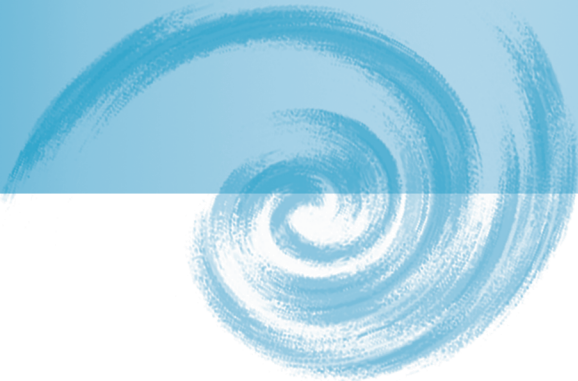


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Elan Leibner

Dear Readers,

This issue of the *Research Bulletin* brings together a number of articles that ponder the work of the educator from somewhat more distant vantage points than those of recent issues.

Our lead article, by Bernd Rosslenbroich, is offered here courtesy of the Medical Section at the Goetheanum. It is a look at play as a phenomenon in animals and humans, as well as an evolutionary manifestation of an increasing level of autonomy. Beautifully illustrated, it provides a thoughtful treatment of a behavior that seems strangely out of place if one takes a traditional evolutionary perspective. While longer than our usual articles, it is rewarding reading that will leave the reader looking at child play with “new eyes.” Rosslenbroich also offers an intriguing possibility for viewing certain natural phenomena as nature’s own “play.”

Celebrated author Richard Louv, of *Last Child in the Woods* renown, is writing about nature as a powerful incubator of creativity and as the ideal complement to technology. He proposes that a new, hybrid mind that can incorporate both nature wisdom and technological acumen will become the most sought-after kind of mind in the decades ahead. He is scheduled to have his new book, *Vitamin N*, published in April, and we are pleased to host his first contribution to the *Research Bulletin* in close proximity to this occasion.

Jost Schieren, a frequent contributor to our *Bulletin* and a trustee of the Research Institute for Waldorf Education, writes about the relationship between anthroposophy and Waldorf education. Schieren’s perspective is profoundly informed by the European, and particularly German, academic

world, yet the questions he raises and the approach he offers are both relevant to the wider discussion about this important question.

Norman Skillen writes about the story of Parzival as an example of a new way of knowing. He describes Gawain and Parzival as each bridging, from opposite starting points, the gap between Love and Reason and suggests that therein lies a key challenge for Waldorf teachers everywhere.

Schieren’s and Skillen’s contributions appeared originally in the online publication RoSE, or Research on Steiner/Waldorf Education (rosejourn.com). This is a peer-reviewed, academic publication originating in Europe, and a worthwhile resource for those seeking academic research and perspectives on Waldorf education.

From the Pedagogical Section Council’s Judy Lucas and Frances Vig come the final two contributions to the ongoing series supporting the Council’s “Core Principles of Waldorf Education” document. They look at the principles of Relationships (#6) and Spiritual Orientation (#7). The whole series was a response to requests for guidance in the study of this document, and we hope that it has been able to achieve its purpose.

Reports from Waldorf Publications and the Online Waldorf Library can be found at the end of the issue.

Happy readings!

Authors who wish to have articles considered for publication in the *Research Bulletin* should submit them directly to the Editor at: waldorfresearchbulletin@gmail.com.

The Significance of Play in Evolution

Bernd Rosslenbroich

*M*an only plays when in the full meaning of the word he is a man, and he is only completely a man when he plays.” This famous statement by Friedrich Schiller (*On the Aesthetic Education of Man*, 1794, quoted from BrainyQuote.com) is in some ways a riddle. Does man not have more important things to do than, of all things, play? What significance does it have that Schiller attributes such an important role to play? He specifically relates humankind to play. Should play not be relegated a peripheral role to more important and serious activities, such as taking care of daily needs or the development of prosperity, culture, and technology?

In the following, first there will be a description of play in the animal world. Which animals play, when and how do animals play? Then the significance of play in the human context will be explored. And finally, a thesis will be formulated on the possible significance of play in evolution.

Play in Behavioral Science

Study of the behavior of animals when playing belongs to the domain of behavioral science, but if one looks more closely at interpretations of the biological aspect of play, they do not adequately address this remarkable phenomenon. Play seems pointless and redundant where “the survival of the fittest” is concerned. Repeatedly the attempt is made to give play an adaptive or fitness-developing role, which however hasn’t really succeeded in explaining it. (Bateson & Martin 2013)

Play uses energy, thus costs valuable resources, but does not provide nourishment. It is dangerous, as playing animals are barely aware

of their environment or of possible predators. With play fighting, there is the danger of injury. Animals use valuable time for these activities, which clearly are not required for survival, being focused as they are on activities that serve no discernible purpose.

Often the assertion is made that movement and behavior patterns are practiced during play, which are needed later for the serious tasks of life, such as catching prey, fighting with rivals, and so forth. This could be true: A few studies have shown that animals with ample opportunity to play were later more skilled in these respects. Many more such studies, however, were unable to demonstrate this at all. Animals that were able to play only a little gained the necessary skills in other ways. (Bateson & Martin 2013)

In the evolutionary comparison the question remains: Why should it be necessary at all, in the case of higher animals, to practice these important patterns of behavior? The rest of the animal kingdom manages without practicing in play. The behaviors required for survival are inborn and proceed more or less as fixed instincts (so-called “fixed action patterns” or FAPs), which seems much more sensible, because the behavior patterns are instantly available when they are needed. If, on the other hand, they need to be practiced first, much can go wrong. A frog does not need to practice catching a fly; he can just do it. Why do many adult animals play even though they already possess all the skills required? Here even the usual cost-benefit calculations fail completely.

Behavioral scientists are aware of this problem of interpretation, and play is perceived as being as much a riddle as before. Burghardt (1998: 3) says: “The origins of vertebrate play are obscure.” Play is even described as a “biological

Translation by Astrid Klee

paradox.” (Fagen 1986: VII) “Animal play behavior addresses a major biological paradox. Why do young and old animals of many species spend time and energy, and even risk physical injury, performing the apparently unproductive behaviors colloquially called play? What makes this useless activity so important that animals literally risk their lives for it? And, even more curiously, why are humans both enchanted and enraged by play?”

Many popular textbooks on behavioral research in animals and on the evolutionary psychology of humans omit the topic completely, thus simply avoiding the issue. This applies especially to books that are heavily adaptation-orientated.

A few books based on recent behavioral research describe the phenomenon comprehensively. (Fagen 1981, Bekoff & Byers 1998, Burghardt 2005, Bateson & Martin 2013) Here the observations, assessment, and analysis of play are at the forefront, even if no clarity about its evolutionary meaning can be gained: Play seems to be absolutely illogical—but somehow fascinating.

Which Animals Play?

Today it is known that all mammals play more or less intensively (*figs. 1–3*). With many mammals, play behavior is limited to the young. In the case of others, it can survive into adulthood, especially in predators, rodents, primates, and whales. Adult dolphins, for example, can be remarkably playful. Among bird species it is mainly the crow types that play. Many parrots also play. And there have been reports of falcons and some small songbirds playing.

The keas (*Nestor notabilis*), especially, are infamous for their boisterous play behavior (*fig. 4*). They live in the mountains of New Zealand where they survive in a habitat, which, for a parrot, is unusually harsh. They use everything to play and can become a nuisance when they use the antennas on houses as gymnastics apparatus

and in the process reduce them to little pieces. In movement games they stand on their heads, do somersaults, land the wrong way, use branches as swings, and make snowballs with which they then play.

A number of film teams have had the rubber seals removed from their cars, and no backpack is safe from their attention. It has even occurred that film equipment is dismantled before the team has had a chance to make any recordings. These birds also love to let the air out of car tires.

Filmmakers Hans Schweiger and Ernst Arendt have captured this performance on film. They talk of the keas’ “highly developed sense of nonsense: [T]hey played tricks on us, and we were not

always sure who was observing whom.”

On the other hand, other vertebrates, such as reptiles and amphibians, as a rule, do not play. There are some notable exceptions.

There have been reports of komodo dragons in captivity playing. It is possible to view a dragon playing on the internet (*fig. 5*).^{*} Turtles in captivity have been documented playing with a ball, a stick, or the hose in their pool. There are descriptions of fish displaying play-like behavior. (Burghardt 2005) It is quite possible that future observations will yield other surprising results. Perhaps play, in other forms than those observed in mammals and birds, is more widely spread than is commonly assumed.

Among invertebrates play apparently does not occur. But even here there is at least one exception, namely that of the ordinary octopus (*Octopus vulgaris*), which in captivity displays great curiosity and after finding interesting objects also plays with them. (Kuba 2006)

What Is Play?

Play is understood to consist of any movement, manipulation of an object, or social interaction which occurs outside the context of

^{*}<http://www.youtube.com/watch?v=almJghl1VXk>



Fig. 1: Cats playing

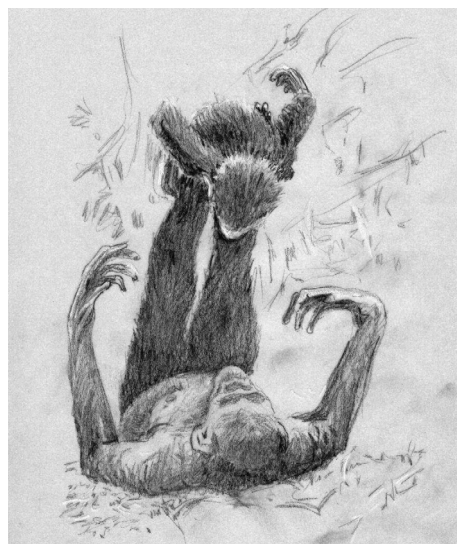


Fig. 2:
A bonobo mother playing with her child
(from Burghard)

an actual problem. Play is behavior unrelated to an immediate need or demand, and within this autonomous situation it contains a high level of flexibility. Play behavior is typically spontaneous, voluntary, and intentional. It is obviously amusing and pleasant, and the animals enjoy it.

Typically play occurs in a so-called “relaxed field,” which means only once physical needs have been met. Animals will play only if they are healthy, have enough food, and don’t feel threatened.

One can roughly divide play among animals into locomotor play, predatory games, object play, and social play. Burghardt (2005) adds another category for the keas: “demolishing play.”

Play consists of the normal components of behavior available to each kind of animal, such as running, climbing, object manipulation, hunting, and many more. In play these are fragmented, repeated, exaggerated, and combined in new ways to achieve a high level of flexibility.

Forms of play:

In animals: *locomotor play, predatory games, object play, social play*

In children (based on Smith 2010):
locomotor play, object play, social play, word play, activity play, fantasy, make believe, games with rules, role play

The Emergence of Autonomy in Evolution

It is possible to integrate the phenomenon of play behavior into an understanding of evolution if it is considered in the context of research on the autonomy theory of evolution. (Rosslenbroich 2006, 2007, 2012, 2014) According to this theory, the evolution of animals and humans did not occur simply as a result of adaptations, but rather as the expression of increased individual autonomy during the course of major transitions in evolution. These transitions included the emancipation from immediate environmental factors, the increase in inner stability, the adjustability of bodily functions, and also an increase of behavioral flexibility within the environment.

It has been shown that the principle of decoupling is of decisive importance for the evolution of nervous systems. In the simple nervous systems of lower animals, a stimulus is instantly followed by a reaction. The stimulus, which is perceived by sensory cells, and the reaction are functionally close. With the development of complex nervous systems, more neurons are included between stimulus and response. This enables reactions to be modulated by varying degrees, so that they no longer have to follow directly, but can be self-determined in many ways. This ability to modulate is initially small, but is increased with the development of



Fig. 4: A playing kea

Fig. 3: Panda bears playing on a slide



Fig. 5: A komodo dragon in a zoo in Florida. The dragon plays with a ring, which is held by the caregiver. (drawn from a video image at <http://www.youtube.com/watch?v=almJghl1VXk>)

larger brains and centralized nervous system. As a result, behavior becomes more flexible, self-determined, and autonomous.

Play behavior occurs only in animals that have the most extensively formed central nervous systems, which means also those that are the most intelligent. These are the animals that develop the most flexibility in their behavior and are thus the least determined with respect to their behavior. This occurs to a limited extent in animals; most behavior, even among more evolved animals, is determined more or less by instinct. However, the degree of flexibility in behavior can be significantly increased, together

with the increased ability to learn, the increased potential for imitation, and the solving of problems.

This flexibility can then be increased in such a way that it becomes an undirected end in itself, which is a prerequisite for play. In this sense, play contains a degree of freedom and can be related to other tendencies in the emergence of autonomy in evolution. It represents the next stage of development among comparable self-determining and autonomous animals.

This flexibility, however, does not occur only in the capacity of the nervous system. It is also typical that a high degree of flexibility and certain diversity in movement become possible: Many mammals perform highly complex and downright acrobatic movements during play, though of course these are strongly dependent on the constitution of the animal in question. It then follows logically that the common octopus is capable of displaying play behavior. Among invertebrates it is the animal with the most concentrated central nervous system and multiplicity of arms (eight of them) that make it astonishingly mobile.

During play, movements are “re-invented,” and behaviors or fragments of behavior occur which could be meaningful in other contexts—for example, flight, attack, or prey-capture actions. In

Drawings by Marita Rosslenbroich

play they can be combined in new and versatile ways, so that they can be individually shaped and therefore become very different.

The time during which young birds and mammals are looked after by their parents provides opportunities for the young to play. During this time they are relatively independent of the struggle for survival.

However, there is a more mental form of flexibility in this equation: Play contains modes of behavior that are feigned—for example, mock fighting. In this situation, the animals have to be able to feign behavior and also to recognize feigned behavior in their game partner. The animal needs to show the play partner that the actions are “only” a game. In the case of dogs this is shown in the well-known bow, in which they go down on their front legs while keeping their back legs straight.

In animals it has often been observed that a game partner who, compared to the other animal, is more powerful or dominant, holds back (“self-handicapping”), as if to make the game fair. This requires a certain degree of cognitive ability and in this respect may be related to the capacity of the central nervous system.

“Individualized” games have been described, especially among primates, in which there are even fewer narrowly predetermined sequences of behavior. If play in any way has the character of practice, then the modes of behavior resulting from it later are also definitely more individual. These “creative components” allow for the formation of very individualized abilities or habits.

It is remarkable that play always elicits happy interest in people. Who hasn’t been captivated by the boisterous play of young cats or dogs? Many pets are played with, and to watch animals playing is always an aesthetic experience. Play among animals touches us like this because it is

reminiscent of our extensive human behavioral flexibility. Eibl-Eibesfeldt (1999: 416) wrote:

Because in play the activities can be distanced from the normally pre-determined instances (urges), the animal creates a relaxed field and is able to experiment with possible movements and to interact dialogically with his environment. This ability to distance himself stands at the root of what we perceive as the particularly human freedom of action.

If one takes into account the emergence of autonomy in the course of evolution, then the development of play is no longer a paradox, but instead can actually be expected to be part of the sequence of evolutionary transitions.

Play in Humans

“Pretend play” is especially characteristic of humans. This ability starts to develop at about the age of 2 and then is carried out extensively over many years. A prerequisite for

this is the separation of two participating representations within consciousness: In the case of objects, there is the image of the object that corresponds to reality and then the fantasy version of the same object (the bathtub as a “ship,” the “cake” in the sandpit). In the case of

activities, one has to distinguish between the action that relates to the real experience of oneself and the action that is played, which is clearly experienced as “just a game.” In older children (ages 6–8), this form of pretend play can be completely decoupled from objects, body parts, and other people (e.g., drinking from a cup or combing hair without having anything in the hand; playing with an imaginary friend and acting out a pretend action together). This decoupling represents a more developed act of consciousness and lies at the origin of a self-

Play is ... any movement, manipulation of an object, or social interaction which occurs outside the context of an actual problem. [It is] typically spontaneous, voluntary, and intentional.

conscious inner life. Insofar as playing animals can distinguish play from reality, one must assume that for them there is also a certain rudimentary decoupling of these two representations. In the case of the great apes, there have even been individual cases described where pretend actions are separated from objects, although only seldom and only in cases where the animals are in the care of humans. (Smith 2010)

In the case of humans, the possibilities for decoupling obviously go far beyond what is possible with animals. Humans can isolate contents of consciousness so removed from sensory impressions or actual experiences that they can be symbolically brought into consciousness. As a result they can be generated flexibly and developed further. These symbolic representations then become the foundations for self-awareness and awareness of the other person as someone capable of consciousness, of empathy, and finally of language, which in the current form is symbolic language. (Carruthers 2001, Smith 2010, Rosslenbroich 2014)

Gärdenfors (2003) distinguishes representations that are elicited directly by a signal (“cued representations”) from others that are detached (“detached representations”). He divides the latter again into “dependent representations,” which depend on outer perceptions, even if the stimulant is not directly present, and “independent representations,” which are not based on outer perceptions at all, such as in the case of fantasy. According to his theory, this sequence follows the order in which these abilities evolved (cued representations → dependent representations → independent representations). The development of thought can be described as the differentiation of more and more representations. When a variety of representations can be inwardly reflected upon—therefore also a number of ways to achieve a given goal—the possibility of choice

comes about. Now motifs that are decoupled from each other can be contemplated. All these capacities can be involved in the various forms of games.

This results, on the one hand, in the possibility of fantasy play and, on the other, in exercising a dynamic flexibility when it comes to dealing with imaginations, memories, and ideas by means of fantasy games.

In fantasy games new ideas or “hypotheses” arise that are then explored, contemplated, and developed further. The possible consequences are “played out” before ideas are rejected or accepted and put into practice. The process is thus closely related to every form of planning and design. New concepts, ideas, sequences, and chronological orders are thus formed and reflected on independently of time and space. Fantasy games are therefore a basis and training ground for the development of creativity. (Bateson & Martin 2013, Nowell 2014)

Of all humans children certainly play the most, but adults also play. In this case games are

often formalized and subjected to a whole variety of rules—for instance, in games of sport. The boisterous romping and tussling of young children is rare among adults but is taken up happily when interacting with children. When adults want to tussle, they sometimes give themselves a complicated system of rules, such as is found in judo, which is then

also placed on a higher cultural level. Games can be highly abstract, such as chess, although movement games are also enjoyed at every age. By these means our highly dynamic and extensive repertoire of movements is continually combined and varied in new ways. In other games, rules and agreements are determined, such as in hide-and-seek or in ball games. This relationship of fantasy and movement shows that neural processes are always closely connected to the processes in the body as a whole, and that the origin of emerging

These symbolic representations then become the foundations for self-awareness and awareness of the other, of empathy, and... of language.

flexibility cannot be sought in the brain alone. (Fuchs 2009)

Games can develop considerable importance for societal life. The Soccer World Cup of 2006 had the dual function of allowing Germany to present itself as a modern and hospitable nation, and in this way clear away reservations that visitors might have retained due to Germany's history. However, events can take on a life of their own, which is also seen in soccer, where the identification of a people with the game is abused for profit.

It is clear that play is fundamental to our humanity. There are similarities in some animals, but play does not have the same importance for any other living beings as it does for humans. This is true not only during childhood and adolescence. Play encompasses an extensive part of human culture. From card games to athletics, from gymnastics or high diving through to the Olympic games, we cultivate our autonomy and flexibility.

Play encompasses an extensive part of human culture; through it, we cultivate our autonomy and flexibility.

Extended Adolescence

Humans enjoy an exceptionally long period of childhood development (Kipp 1980), in which there is much latitude for the development of the "relaxed field." In anthropology there are two phases that in comparison to primates are very extended (Nowell 2014). First, there is the toddler phase, which lasts from post-weaning to the cutting of the first molars, or a period of approximately four years. These years enable the child to have additional experiences in behavior, which considerably extend plasticity in development. Second comes the period of adolescence, from puberty to the end of bodily growth. This allows for an additional period of learning, practice, and transmission, but also for the modification and individualization of cultural ability in particular.

Studies using functional magnetic resonance tomography have shown that, during these

extended times of maturation, the activities of the prefrontal cortex display especially marked development. (Case & al. 2000, Neubauer & Hublin 2012) The prefrontal cortex is connected with abilities such as attentiveness, memory, logical thought, and planning—i.e., higher mental functions and flexible associations. (Neubert & al. 2014) It thus suggests that play influences the maturation and formation of pathways in these areas.

And yet our synapses and pathways develop later than those of, for example, chimpanzees. They emerge during early childhood and increase as a result of our experiences, thereby

considerably enhancing our plasticity. In the case of chimpanzees, many connections are already fixed at birth. We have 98.8% of the same genes as chimpanzees, but it is clearly an important

difference that the gene expression connected to the formation of synapses is delayed. In the case of apes, this stops at about birth. In the case of humans, it continues for about five years, and in some areas for much longer. However, new synapses are not always simply being formed. Rather, it is the case that, to begin, an excess of synapses and neural pathways are formed, and only those that are used then stabilize. Pathways that have not been stabilized regress. (Casey & al. 2000, Liu & al. 2012) Humans take much more time to complete this process. Especially during this time, if fortunate enough to be protected, there is an inordinate amount and intensity of play, which is not evidenced in animals. (Smith 2010)

Research on animals has shown that experiences made during play have a substantial influence on the formation of synapses and neural pathways. For example, young laboratory rats were raised in three categories: The animals in the first group had only one playmate; in the second group they had more. Each animal in the third group had its mother for company and thus

there was not much impulse for play, as adult rats do not play with their young. An investigation of the brains showed that there were substantial differences in the formation of the prefrontal cortex, with clearly fewer pathways in the animals that had only played a little or not at all. (Pellis & Pellis 2009) The authors concluded that “not only does the brain form play, but games also form the brain.” They even compared such deficits with cases where pathological damage to the prefrontal cortex could be observed.

One can assume that this is also the case in humans. Added to this is the development of more flexible motor skills, which also have to be trained as practicing skills. But the decisive factor is the training of motor and neural flexibility, the ability to react to situations and tasks with independence, creativity, and versatility. The same cognitive resources involved in make-believe games among children make possible creative thinking and planning in adults. Both involve experimentation with imagined possibilities and assumptions. (Carruthers 2002)

Children practice social skills in this way. However, this is not about learning particular rules of behavior in dealing with each other, but instead concerns the ability to react to relevant individual situations. Social interactions are, after all, nowadays less determined by particular codes of behavior; instead each instance needs to be approached flexibly, and individual situations need to be adjusted. It is thus often easier for adults to build up contacts and befriend each other while participating in play or sport. Children in the same way learn to interact flexibly with the cultural structures of their environment: Whereas in former times they played with horse and wagon or with tin soldiers, today they play with cars.

The fact that this skill is acquired by means of a highly flexible form of learning supports

the premise that social and cultural behavior in principle remains changeable. One could say with only minor exaggeration that play has a subversive character, because what people practice in play can in principle also be changed. Perhaps this is a reason why some educational systems try to suppress play in children. The excessively strict raising and education of children in some Asian countries, especially China, leaves no room for play, and in this way may suppress contrariness, resistance, and social autonomy.

Here in Germany we too need to examine the consequences of schools allowing ever less time for free play: When lessons extend well into late afternoon and are then followed by

homework, there is virtually no time left for free play. Add to the shrinking time for play the flooding onto the market of “toys” that leave no space for fantasy-filled, self-determined play. The space to create one’s own play is filled with surrogates, such as computer games, which, according to psychological studies, have a negative impact and cannot replace free, physical play.

Author Susanne Gaschke of the German weekly newspaper *Die Zeit*, has written extensively about the situation of children in modern times. She asks the question: “Are we at the moment raising the most uncreative generation of all time?” The deprivation of play, she writes, may be a substantial contributing factor:

Cultural scientists view ... unstructured play in children as the initial step for the later cultural achievements of adults: Jumping and rough-and-tumble become dance and sport, playing with building blocks develops into art and architecture, role play becomes literature and theatre. Will children whose “middle childhood” has been abbreviated,

The same cognitive resources involved in make-believe games among children make possible creative thinking and planning in adults. Both involve experimentation with imagined possibilities and assumptions.

still be able to develop the problem solving ability and creativity which a modern, highly-complex society requires from its citizens, employees, entrepreneurs, artists, researchers, and politicians? We are in the middle of a long-term experiment, of which we will know the results only in decades to come. (Gaschke 2011)

Other authors also see grave consequences flowing from the fact that children have ever fewer experiences of free play with other children. The psychologist Peter Gray (2011, 2013) postulates that the decrease in such experiences contributes to the increase in anxiety, depression, suicide, feelings of helplessness, and narcissism in children, adolescents, and young adults. Free play acts as a medium through which children develop autonomous interests and competency. It promotes the ability to make decisions, solve problems, develop self-control, and regulate emotions, as well the ability to find friends, get along with others, and experience happiness. Brown & Vaughn (2011) are of the opinion that play stimulates imaginative ability, “strengthens the soul,” and makes life more fulfilled and meaningful. It strengthens emotional and physical health in children and adults and preserves curiosity and flexibility.

Extensive play could indeed be seen as the medium that makes possible societal development, innovation, and creativity. Play also brings about a reality of its own: one of possibilities. Only a societal establishment that has no interest in this will try to suppress play or make it alien. Even the disciplines of sport are institutionalized, formalized, or used for commercial purposes to such an extent that they risk losing their actual play character.

Play can also have a general effect on learning. When something is pleasant and

satisfying, it is easier to learn. This obvious intuitive insight has been confirmed in comparative trials and been proven neuro-physiologically. (Nowell 2014)

Perhaps it is important that during the course of our lives we continue to play. George Bernard Shaw wrote: “We don’t stop playing because we grow old, we grow old because we stop playing.” (Bateson & Martin 2013:5) Newest findings indicate that the structure of synaptic connections remains extremely flexible and changeable throughout life. Neuweiler (2006, 2008) demonstrates that, in contrast to the earlier image of a stable contact point between neurons, another picture of a very dynamic

structure has now been developed. The connections can change within a very short time, and as a result the brain is a flexible network and its behavior can be measured or predicted only in restrictive conditions. Today it is also ever clearer, from a neuro-physiological point of view, that the brain, even our physiology as a whole, contains the possibility to continue to support learning and to form new nerve

cells and new synaptic connections well into old age. (Robson 2013) We have a highly developed neural flexibility that clearly contradicts the widely held view of neuro-genetic determinism. (Gilbert 2000)

Friedrich Nietzsche (1886) wrote: “A man’s maturity: that is to have rediscovered the seriousness he possessed as a child at play.”

Dutch cultural historian Johan Huizinga (1939) even developed a philosophy according to which humans develop their abilities especially through play (*Homo ludens* = playing man). Man discovers his individual characteristics in play and thus develops according to these experiences into what he is. Play is seen as a prerequisite for freedom of action and individual thought. His concept of play is, however, rather broad and therefore tends to become imprecise.

Extensive play could indeed be seen as the medium that makes possible societal development, innovation, and creativity.

We live in a society that is based on competitiveness, rivalry, and efficiency and is ideologically supported by a theory of evolution that is one-sidedly focused on selection. Play has an ever-smaller role in this story of evolution. Parents and schools are ever more focused on preparing their children for the demands of a meritocracy and planning their time according to this goal. Play becomes a superfluous waste of time—occasionally needed, but otherwise unimportant. Engagement with available media does the rest, offering a perverted version of play cut off from any social context involving close contact with others, of movement, and of sensory experience of the world. Even in the case of sport, which after all can be seen as a form of play, the principles of a meritocratic society and competitive thinking have been imported into the game, so that the actual nature of play is thereby lost.

Creativity

Bateson and Martin (2013) make an interesting distinction between creativity and innovation. *Creativity*, from their point of view, describes the general development of new ideas or new ways of acting, independent of a practical value or use. *Innovation* on the other hand describes the change in a practical procedure, which is then also taken up by others. Innovation develops something new that is useful. Bateson and Martin discovered that creative people are not necessarily innovative, and that innovative people often pick up ideas that were developed by creative people.

In this sense creativity is something more all-encompassing and more closely related to play, in that it is primarily independent of usefulness and application. New ways of behaving, new activities, new physical or spoken forms of expression, and new ways of thinking are often

developed independently of their immediate usefulness and are thus closely connected with play.

A creative person discards established patterns. He breaks through rules and laws. He observes new relationships between thoughts, things, or forms of expression which previously seemed to have no relationship. He is able to connect them in new ways, just as movements or thoughts can be constantly recombined during play. This unlocks possibilities that were not present before, without regard to whether they are justifiable or worthwhile.

History is full of highly creative people who also displayed a certain playfulness. Mozart is certainly a good example of this, and his playfulness is also evident in his music, even to the point of regular musical jokes. Picasso was known for his playfulness. M.C. Escher said of himself that he loved to play with certainties, perspective, and spatial directions. This is how his pictures of impossible stairs and streams originated.

The philosopher of science, Thomas Kuhn, compared scientific work with play. Certainly this does not apply

generally, but even among scientists there are ample examples. Alexander Fleming, the discoverer of penicillin, was known for his playfulness. His boss wrote disparagingly that he conducted research as if it were a game and that he viewed everything as a big joke. When Fleming was asked what he was doing, he would say that he was playing with microbes. It was amusing to him to break the rules and to find something that no one had ever thought of before. Max Delbrück, one of the founders of modern molecular biology and Nobel laureate, formulated a “principle of moderate slovenliness”: One should be careless enough in the laboratory to allow the unexpected to occur, but not so

New ways of behaving, new activities, new physical or spoken forms of expression, and new ways of thinking are often developed independently of their immediate usefulness and are thus closely connected with play.

careless that one can no longer say what it was. (examples from Bateson & Martin 2013)

Play can also be completely internalized. We speak of make-believe games, for which one should perhaps allow more time than our acquired craze for efficiency allows. This must have been one of the components in the early development of Albert Einstein. (Isaacson 2010) As a child Einstein took a long time to learn to speak—so long that his parents consulted with a doctor, and the maidservant called him “the dimwit.” His independent disposition and his resistance to authority, according to his own conviction, contributed to his scientific creativity. The fact that he took so long to learn to speak was because he thought in pictures rather than in words. He loved his visual “thought experiments.” What we would call *daydreaming* an Einstein would call *thought experiments*.

Most of his great scientific achievements arose from such imaginary adventures: How would a light source look if one could walk next to it at the same speed? If a person on a station platform sees two flashes of lighting at the same time, would another person in a train passing by also see them simultaneously? Would someone standing in a closed elevator that is going up beyond the gravitational attraction of the earth have the same perception as someone in a closed elevator which remains within the gravitational field of the earth?

His slow learning allowed him to break his head over everyday phenomena that we accept as given. Throughout his whole life, Einstein retained a particular child-like enthusiasm and ability to wonder. He believed, as he later wrote in a letter, that people like him did not age, but instead retained their child-like curiosity when faced with the great mysteries of the universe. He wondered his whole life about the astounding natural phenomena that most adults accept as given. What is a magnetic field? Why does the needle of a compass jerk and then show north? He always tried to imagine facts in pictures. What would it be like to ride on a ray of light? What

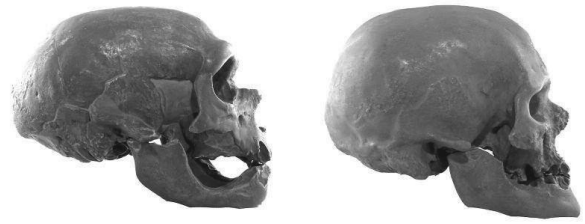


Fig. 6: Skull of *Homo neanderthalensis* (left) and *Homo sapiens* (Cro-Magnon, right). Especially compare the formation of the forehead.

does a field of gravity look like? Most of all he was enough of a rebel to question every finding, no matter how self-evident it was. He always proclaimed that the foolish belief in authority was the enemy of truth.

Early Hominids

Through studies on fossil finds of early hominids, such as Neanderthals or *Homo erectus*, it can be shown that these hominids had a shorter physical developmental phase than *Homo sapiens*. This could be discovered especially from comparing the growth of teeth. The adolescents reached adulthood significantly sooner. By comparison, there was a slowing-down and an extension of maturity in *H. sapiens*, which lead to a longer time in which learning and play could take place. (Nowell 2014)

The difference already existed in the first migrants of *Homo sapiens* who arrived in Europe more than 40,000 years ago from Africa and colonized the ice age landscape for the next 30,000 years. For a long time, these so-called Cro-Magnon people lived parallel to the Neanderthals (*Homo neanderthalensis*), who then died out.

Today it is well known that the Neanderthals already displayed extensive cultural ability. The new migrations of Cro-Magnon, however, brought a cultural explosion, of a kind that no other form of human had been capable of before. Besides elaborate and meticulous stonework, small carved or engraved figures of astonishing skill and artistry appear in the archaeological sites from the time of their arrival in Europe.

This new creativity is obviously connected with the change in physical organization, to which belongs the increased period of adolescence. How far the capacity for flexible inner picture-formation extended in the case of Neanderthals can of course not be reconstructed. However, they did not leave behind any art comparable to that of *Homo sapiens*, other than artistically worked stones. The formation of extensive autonomous representations and symbolic thought were presumably not accessible to the Neanderthals, which one can surmise from the type of cultural objects left behind by them. (Nowell 2014)

Compared to modern man, Neanderthals had faster pre- and post-natal brain growth. The shape of the skull was also different from that of modern man. In the case of young Neanderthals, the skull was arranged in a round shape, but gradually became elongated with a flattened forehead. In the course of individual development, the Neanderthals thus gave up the early round form of the skull, which could probably be related to the less concise development of the prefrontal cortex (fig. 6). This occurred in a phase during which modern man developed the most important neural connections. As a result it can be assumed that the neural connections in the Neanderthals were different from those that we now know in modern man, and that this led to the difference in cognitive abilities. The extended prefrontal cortex of *Homo sapiens* especially led to significantly increased mental abilities. (Coolidge & Wynn 2005, Gunz & al. 2010, Neubauer & Hublin 2012) Neanderthal children probably also played, but there was not as much time for development given to them, and it can therefore be assumed that fantasy play was not yet possible to this extent.

The artistic products of Cro-Magnon man reflect the newly developed ability to engage with images and abstract visual forms and to inform themselves about them. It is during this time also that the cave paintings in southwest

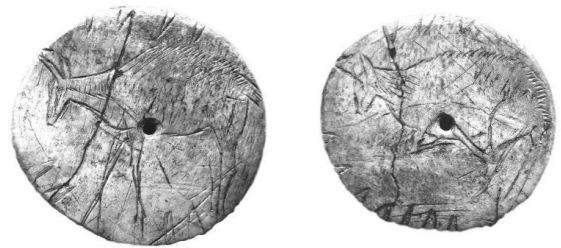


Fig. 7: Front and back of a bone disc from the early Palaeolithic (Lauerie-Basse, Dordogne). If one spins the disc very fast, it looks as if the represented animal is alternately stretching and bringing in its legs. (Azéma 2011)

France and northern Spain, which we admire so much today, arose. The images that mostly depict ice age animals, frequently with very characteristic details, often arose deep inside the caves, independently of any direct perception of the drawn motif. Thus it can be assumed that these cave paintings were an essential practice area for increased autonomous handling of imaginations and inner pictures. (Rosslenbroich & Rosslenbroich 2012)

The changes that Cro-Magnon man brought with him must have had a profound evolutionary significance. A longer childhood must have been important for the formation and maturation of neural abilities, the development of synapses and neuro-physiological pathways, and the attainment of increased plasticity of behavior through play, as well as further social and cognitive skills.

This does not in any way demean Neanderthals or the even older *Homo erectus*, because, compared to other primates, they achieved considerable cultural artifacts, such as the skilled working of stone, command over fire, the manufacture of spears, and much more. In the face of these cultural skills, it is not appropriate to speak of “primitive” forms. However, in the case of *Homo sapiens*, there is a new level of autonomous development that increasingly enables the free internal mobility of images.

Cave painting, as well as so-called craftwork, with carving and engraving on bones and sheets

of rock, also show an impressive tendency to play with colors and forms. The experimental archaeologist Marc Azéma (2011) has managed to reconstruct the manufacture and usage of small discs of bone, which on the front and back show different postures of an engraved animal. These discs were evidently threaded onto a sinew and by winding up the sinew could be made to spin very fast. The resulting speed at which the images spun had the optical effect that the legs of the animal were moving (*fig. 7*). What is this if not creative play?

Phenotypic Plasticity

One can thus observe that play in higher animals gains increasingly in importance. It is precisely the more developed types in which at least the young animals, but often also the adults, play. And finally, in the case of humans, play takes on a significant role at every age. It can, however, be assumed that these organisms not only had the capacity for play, but that, conversely, play also influenced their evolution.

In more recent biological-evolutionary concepts, the phenotype is increasingly seen as more significant for these changes of type. (overview Rosslénbroich 2014: Ch. 12) The earlier assumption that evolutionary changes can be exclusively related to random genetic mutations is, in the face of recent insights in genetics, no longer valid. Some authors in the meantime assume that the phenotype for such changes is more important than the genotype and that changes could take place on different levels. (Pigliucci & Müller 2010, Shapiro 2011) Mary Jane West-Eberhard (2003) represents the thesis that the phenotype determines evolutionary changes and that the changes only become genetically fixed as a second stage.

Also interesting is Wolfgang Wieser's (1998) idea that with an increase in complexity of the

structure of the organism over the course of evolution, the significance of the phenotype increases, which leads to a gradual emancipation from the specifications of the genotype. A "partial independence of the phenotype from the genotype" thus develops.

Wieser bases his observations on the threefold model of the organism: The lower level forms the genome. The middle level forms the phenotypically visible form, including cells, tissues, and organs, as well as molecular factors as bearers of function. The third layer is behavior. While prokaryotes are still largely determined by the lower level, or the genome, for more advanced animals, especially multicellular animals, the middle and third levels increase in importance. The phenotype becomes ever more flexible, which is made increasingly possible by its systematic function, and it becomes less genetically determined.

The spectrum of possibilities of genetic programs, according to Wieser, becomes ever more rich, interconnected, and differentiated, and with this there is an increase in possibilities for movement and for interactions between organisms and their respective environments. The bigger the range of possible reciprocal interactions with the environment, the more autonomously the phenotype has to be able to operate. For this purpose networks for processing information are built up, for which there are construction precepts in the genome, but nevertheless their relative activity takes shape only by means of interaction with the environment.

Gerhart & Kirschner (1997) show that during the course of evolution the significance of regulatory factors for the control of transcription has increased. There are thus instances that, on the phenotypical level, regulate what is expressed out of the existent genome and what is not. The

A longer childhood must have been important for the formation and maturation of neural abilities, the development of synapses ... and the attainment of increased plasticity of behavior through play.

phenotype thus acts with increased autonomy by means of the regulatory factors.

A further example of increased independence of the phenotype is the circumstance that the individual switch pattern of the brain can only be genetically programmed in broad outlines, whereas the phenotypical formation crucially depends on the usage of neural pathways. A similar phenotypical flexibility exists also with regard to the fine structure of the vascular supply in tissue.

The behavior of the third level, on the other hand, connects the phenotype with its biotic and abiotic environment. Social systems especially arise as part of this environment, which, as more or less flexible forms of organization, can bring about new patterns and thus also new evolutionary tendencies. (Tomasello 2009) Genetic prerequisites play a role in the sense of genetic norms of reaction, but are integral to the context of the system and are in part dominated by it. Ernst Mayr (1988) already formulated the assumption that changes in behavior mostly precede changes in organs. In the case of humans, these possibilities are further individualized so that there is an extensive unfolding of the repertoire of individual phenotypical behavior patterns, which constitutes the comparatively fast changing historicity.

Play in its various forms stands at the center of these tendencies and possibilities for flexibility and autonomization, compared to fixed patterns of behavior. In the case of organic beings, interdependencies always have to be considered (Schad 1982, Rosslenbroich & Heusser 2010), and therefore play, by means of phenotypical plasticity, could also have a reaction on organic prerequisites and their evolution. One could probably say: Autonomy enables play, and play expands autonomy.

This fundamental process can be examined in exemplary fashion in the activity that counts

as one of the top achievements of human autonomous ability: playing the piano. This requires uncommonly precise mobility of the hands and their control by means of the will, as well as an extensive mental concept and ability to imagine music. And then thirdly, the highly differentiated ability to hear by means of a highly developed sensory organ, which includes its neural processing.

By means of the complex processes gained by learning an instrument, other abilities are also promoted, including higher cognitive skills.

As presented above, humans are in principle able to separate these processes from each other and thus achieve flexibility. This means that the mental imagining of the music, for example a melody, can also be evoked independently from a performance at a piano, as when “a melody is going round in one’s head.” Or alternatively we can also, without a musical

picture, press the keys of the instrument and allow ourselves to be surprised by what we hear. And in the same way, we can hear music without mentally taking it in—that is to say, to hear it “without listening” or moving one’s fingers. A further motor isolation beyond what is required here is what has to be practiced by every piano student if the two hands are to become independent of each other, namely to be able to play different voices, for example melody and accompaniment.

Beyond this possibility these elements are then voluntarily brought together and influence each other, even becoming a new unity. These neural processes lead to increased agility of the hands, and through this activity of the hands the corresponding area of the brain is also trained extensively.

Especially Fuchs (2009) indicates the connection of these two, and in his book works out that the neural processes are closely related to all the processes in the body, so that the brain can be understood as an “embodied” organ, which mediates our relationship with the world, to other people and to ourselves, and which

connects perceptions and movements to each other. A prerequisite is the high plasticity of the brain, by means of which it is able to transform recurrent connections of the organism with a given object into sensory-motor connections, which are based on their relative functions. Through this the brain becomes a matrix of preconfigurations, created from predetermined patterns, which provide potentialities for mobility. It becomes “an organ of possibilities.” Fuchs refers to an example taken from the investigations into the psychology of music by Bangert & Altenmüller (2003), which show that through practice on the piano both tone and neural movement sequences are practiced at the same time. It is then enough to hear the relevant melody to make it possible to remember the movement patterns for the fingers. In pianists this leads to the phenomenon where their fingers start moving just from hearing a melody. In addition they also “hear” the melody before their fingers create it on the piano.

There are an increasing number of studies which show that by means of the complex processes gained by learning an instrument, other abilities are also promoted, including higher cognitive skills. (Herholz & Zatorre 2012, Rickard & McFerran 2012) It remains decisive that we can voluntarily bring about these connections and, in principle, also disconnect them. A pianist does not compulsively bang on the table every time he thinks of a melody. The relevant components can be deliberately recollected more or less separately from each other, which initially yields the basis for the necessary flexibility. Something similar probably occurs in acrobatics, dance and eurythmy, which in this sense involves the development of the whole person.

The Game of Evolution

In the case of songbirds, the possibilities of play can also be expressed in song. Many songs

of birds are so rich and flexible that parallels to the movement games of other animals can be drawn. This occurs in the soft, very variable, “study,” or “sub song,” characteristic of young adolescent birds, as well as in the autumn and winter song of many songbirds. It is thus justified to also categorize it as play and describe it as play singing. The “sub song” or versatile songs of some kinds of songbirds can even be more variable and longer than the later territorial songs of adult males. The relaxed territorial song is also often described as musically richer than the excited conflict songs that determine territorial boundaries. (Lorenz 1935, Hassenstein 1969, Streffer 2009) The “playful use of voice in songbirds” in a relaxed environment is, according to Streffer, an expression of an increased level of freedom.

Even when the common buzzard or the red kite lets itself be carried by thermals at great heights, this occurs without any obvious immediate physical requirements, and in this sense is an expression of play.

If one were to look, it is obviously possible that one may find other areas in which play of this kind exists. Is it perhaps even possible to find this phenomenon in other areas that have not previously been seen as play? Could it be that nature “plays” in ways other than through behavior? Does nature possibly play simply in the diversity of its beauty and form? If so, the many attempts to compulsively interpret every form or color, every “mood” of nature as useful or beneficial, would become pointless. Nevertheless, changes in organisms are also due to the necessities of function, to enable the bearers to survive. And clearly there are patterns of form and function, boundaries and requirements according to which changes occur. But could it be that, within this framework, within this range of possibilities, there are also degrees of freedom, which are filled in a playful sense?

Could it be that nature “plays” in ways other than through behavior? Does nature play simply in the diversity of its beauty and form?

Perhaps belonging to this is the perplexing diversity of colors and forms among fish, butterflies, and beetles that every observer experiences. Is nature here playing in some primary, creative sense, so that the richness in creation is not merely in the service of an immediate purpose, but is rather a game of nature? Can the next innovative, evolutionary step perhaps even be prepared and found by means of playing in this way with the existent possibilities?

Among snails and shells there is such diversity, to the extent of forms so bizarre that the usefulness of these formations remains puzzling to the observer. The beautiful colors and patterns of the cowry snail are, to crown it all, in the case of the live animal, often hidden by a fold in the mantle, so that they are not normally visible. What does this mean? Diversity and beauty in the case of unicellular organisms fascinated Ernst Haeckel. Could this be a game played by nature within the possibilities of unicellular organisms?

If one views the different stages of evolution, one gains the impression in every instance that, once a principle of organization has been attained, it has been played with. *Eldiacaran fauna* was an early form of multi-cellular organism which colonized some ocean beds before the development of metazoan phyla in the course of the Cambrian explosion about 540 million years ago. The organisms were predominantly flat, and therefore spread mainly on the surface, whereby they showed a virtuoso diversity in the possibilities for this surface formation.

During the Cambrian explosion the multi-cellular animals developed a level of organization in which it was possible to form their bodies three-dimensionally, with three germ layers and increased outward demarcation. In the course of this, all the animal phyla that are now known came about very quickly. Not all survived, but some continued evolving and resulted in the

forms of animals known today. Did evolution play the possibilities that this new principle of formation offered during the Cambrian?

McShea & Brandon (2010) presented, in the context of the already mentioned newer deliberations on evolution, the concept that nature tends to always generate complexity. This can be the complexity of individual organisms, of eco-systems, or bio-diversity in general. Secondary to this it is then delineated, canalized, and reshaped by the most varied processes. Could this also be described as a kind of playing out of the relevant available possibilities?

This “playing” would have occurred every time in the engagement with the requirements of the organization, the environment, and the necessity to survive. But filling in the range of possibilities and its expansion could have occurred in a kind of creative play by nature.

“Beauty Is Perfection plus Freedom”

Goethe (1794) tried to connect the concept of beauty in the multiplicity of organic forms to degrees of freedom in an essay to Schiller, “The Extent to Which the Idea ‘Beauty is Perfection in Combination with Freedom’ Can Be Applied to Organic Nature”:

An organic being is so manifold in its exterior appearance, in its interior forms so manifold and inexhaustible, that one cannot choose adequate viewpoints with which to observe it, that one cannot develop adequate organs of perception to dissect it without killing it. ... To enable ... an animal, unhindered, to satisfy even the most basic needs, it has to already be a perfect entity; only then, alongside the fulfillment of needs, there remains enough energy and ability to undertake random, to some extent pointless activities; already then we will be aware of its outer beauty.

Is the richness in creation not merely in the service of an immediate purpose, but is rather a game of nature?

... In these animals the limbs relate to each other in such a way that none hinders the other in its purpose, so that instead there is a perfect equilibrium between necessity and need, completely hidden from one's eyes, so that the animal seems to act only on the basis of free determination. One thinks of a horse that one observes moving its limbs in freedom.

If we progress to the human, we find him almost freed from the bonds of animalness: His limbs, in a gentle subordination and coordination, are subjected to the will more than the limbs of any other animal, and not only formed for all kinds of activities, but also skilled for the expression of his spirit.

According to this, beauty is thus experienced when manifestations of life go beyond the necessity of preserving life. This we can already experience in the realm of potentiality:

We call a perfectly formed being beautiful if we can think while looking at it, that as soon as it so wishes it might use all its limbs in a manifold, free manner ...

Several criteria related to play are mentioned here: Play presupposes a degree of freedom, it goes beyond the immediate need for survival, and we relate it to a positive experience. We find it touching when animals or children play with each other. We like it when the birds make sounds that are “playful.” We like it when raptors allow themselves to glide elegantly to great heights, and we like to watch young cats boisterously romp about.

Could there be a connection between beauty and the free play exhibited by the power of nature? Do we experience nature as beautiful there where it extends beyond necessity and the demands of survival? Is there a relationship

Play presupposes a degree of freedom, it goes beyond the immediate need for survival, and we relate it to a positive experience.

between play behavior and the iridescent diversity of colors and forms in butterflies, snail shells, coral fish, and bird feathers? Where organic possibility has allowed it, has the “free play” of forms, colors, and behavior perhaps promoted evolution?

Is it possible—by taking these deliberations further—to find a connection between diversity resulting from evolution, the “free play” of forms, colors, and behavior, where organic possibilities allow this, and play in behavior as an expression of freedom in varying degrees?

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Bernd Rosslenbroich studied Veterinary Medicine at the University of Gießen (Germany). For his PhD thesis he changed to the faculty of human medicine, where he conducted experimental research on the treatment of melanomas. After writing a review book on human chronobiology, he was offered a position at the University of Witten/Herdecke. There he worked at the Institute of Evolutionary Biology, beginning his studies on the question of autonomy in evolution, based on his experience in comparative physiology. In 2006 he finished his “habilitation” (qualification as a university lecturer in Germany) on this topic. The thesis of his habilitation was published as a book (in German) in 2007. In the same year he was appointed head of the institute. His most important book to date is *On the Origin of Autonomy. A New Look at Major Transitions in Evolution* (2014). Cham, Heidelberg, New York, Dordrecht, London: Springer.



Developing Hybrid Minds: The Future Will Belong to the Nature-Smart

Richard Louv

For decades Waldorf education has pioneered ways to engage children in the natural world, not only for their intelligence and creativity, but for their spirits. For all of human history and prehistory, experience in the natural world has helped shape our species, including our brains. Yet, in recent decades, our society—and most schools of education—have looked everywhere but toward more natural environments for healthier brain development. As Waldorf education has shown, it's time to take a fresh look at our own backyards and schoolyards—at nature nearby and far.

We can look to earlier examples. Ralph Waldo Emerson, in a speech at Henry David Thoreau's funeral service, described his friend's many talents:

He was a good swimmer, runner, skater, boatman, and would probably out-walk most countrymen in a day's journey. ...The length of his walk uniformly made the length of his writing. If shut up in the house he did not write at all.¹

These walks not only stimulated his creativity, but had practical, day-to-day application: Thoreau's outdoor experiences made him a sought-after land surveyor; he could not only outline boundaries with exactitude, but could also explain the ecological workings of an area in great detail. An amateur stream-watcher and river-gazer, he knew the secrets of local waters long before professional hydrologists took their measures.

This article is adapted from portions of Richard Louv's books, including *Vitamin N*, and expanded from a 2013 article in *RSF Quarterly*.

When NPR commentator John Hockenberry reported the research that revealed greater mental acuity after a nature walk, he pointed out that Albert Einstein and the mathematician and philosopher Kurt Gödel, “two of the most brilliant people who ever walked the face of the earth, used to famously, every single day, take walks in the woods on the Princeton campus.”²

Well, we're not all Einsteins. But we've all experienced that *eureka* moment when the brain is relaxed and in a positive state. That can occur in a shower, indoors or outdoors, but in all of its complexity—with all of its loose parts and invisible connections—the natural world is by definition an incubator of creativity.

Becoming Nature-Smart

As I wrote in *Last Child in the Woods*, creative genius is not the accumulation of knowledge; it is the ability to see patterns in the universe, to detect hidden links between what is and what could be. In 1977, the late Edith Cobb, a noted proponent of nature-based education, contended that geniuses share one trait: transcendent experience in nature in their early years.³ Environmental psychologist Louise Chawla of the University of Colorado offers a broader view. “Nature isn't only important to future geniuses,” she says.⁴ Her work explores “ecstatic places.” She uses the word *ecstatic* carefully. Rather than applying the contemporary definition of “delight” or “rapture,” she prefers the word's ancient Greek roots—*ek stasis*—meaning “outstanding” or “standing outside ourselves.” These ecstatic moments are “radioactive jewels buried within us, emitting energy across the years of our lives,” as Chawla puts it. Such moments are often experienced during formative years. But, because of the brain's plasticity and individual

sensitivities, they can happen throughout life. And they can happen for everyone, giving each of us the touch of genius.

Most studies of learning ability and creativity associated with the relationship between nature experiences and creativity involve children.

In 2006, a Danish study found that outdoor kindergartens were better than indoor schools at stimulating children's creativity.⁵

The researchers reported that 58% of children who were in close touch with nature often invented new games; just 16% of indoor kindergarten children did so. One explanation, for adults as well as children, is suggested by the "loose parts theory" in education, which holds that the more loose parts there are in an environment, the more creative the play. A computer game has plenty of loose parts, in the form of programming code, but the number and the interaction of those parts is limited by the mind of the human who created the game. In a tree, a woods, a field, a mountain, a ravine, a vacant log, the number of loose parts are unlimited. It's possible, then, that exposure to the loose but related parts of nature can encourage a greater sensitivity to patterns that underlie all experience, all matter, and all that matters.

Other research focuses on adults. In 2012, the University of Kansas News Service reported: "Research conducted at the University of Kansas concludes that people from all walks of life show startling cognitive improvement—for instance, a 50% boost in creativity—after living for a few days steeped in nature."

"There's growing advantage over time to being in nature," said Ruth Ann Atchley, department chair and associate professor of cognitive/clinical psychology at the University

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Nature stimulates the mind and soul and our love of place, and there is no electronic substitute.

of Kansas, when the results of the study were announced. "We think that it peaks after about three days of really getting away, turning off the cell phone, not hauling along the iPad and not looking for internet coverage. It's when you have an extended period of time surrounded by that

softly fascinating environment that you start seeing all kinds of positive effects in how your mind works."⁶

Nature experiences stimulate learning and inspire creativity through ecstatic experience but also through the complexity of possibilities for play and learning, and through a kind of osmosis.

We need more research in this field, although we already know intuitively that nature stimulates

the mind and soul and our love of place, and that there is no electronic substitute, particularly for infants and young children. Harvard professor E.O. Wilson's biophilia hypothesis holds that human beings are predisposed to an affiliation with the rest of nature. Researchers suggest exposure to the natural world restores the brain's

ability to pay attention, that it not only restores us, but excites us, by stimulating all of the senses.

As I've often mentioned, these ideas are not new to Waldorf teachers or other nature-based educators. But, because of recent research and a growing movement to connect children to nature, a

wider public is coming to that conclusion—even as children's daily experience is becoming more virtual.

The Hybrid Mind

As of 2008, for the first time in history, more than half the world's population lives in towns and cities. The traditional ways that humans have experienced nature are vanishing along with biodiversity. At the same time, our culture's faith in technological immersion has no limits.

When my sons were growing up, they spent a lot of time outdoors, but they also played plenty of video games—more than I was comfortable with. Every now and then, Jason and Matthew would try to convince me that their generation was making an evolutionary leap; because they spent so much time texting, video-gaming, and so forth, they were wired differently. In response, I pointed out that my generation had said something similar about drugs, and that didn't work out so well. Chances are, neither will electronic addiction, which is why the nature balance is so necessary. What's different now is not the presence of technology, but the pace of the change—the rapidity of the introduction of new media and adoption of new electronic devices.

That nearly total immersion may be clouding our senses and our ability to make sense of the world. Gary Small, a neuroscientist at the University of California, Los Angeles, suggests that the pace of technological change is creating what he calls a “brain gap” between the generations. “Perhaps not since early man first discovered how to use a tool has the human brain been affected so quickly and so dramatically,” he writes in his book, *iBrain: Surviving the Technological Alteration of the Modern Mind*.

If Small is right, then my response to my sons—that evolution doesn't work that fast—may be overstated.

One view is that people who experience too much technology in the formative years will stunt the maturation of normal frontal lobe development, “ultimately freezing them in teen brain mode,” as the Canadian magazine *Macleans* puts it. “Are we developing a generation with underdeveloped frontal lobes, unable to learn, remember, feel, control impulses?” Small writes. “Or will they develop new advanced skills that poise them for extraordinary experiences?”

Optimistic researchers suggest that all this multitasking and texting is creating the smartest

generation ever, freed from the limitations of geography, weather, and distance—all those pesky inconveniences of the physical world. But Mark Bauerlein, an English professor at Emory University, in his book, *The Dumbest Generation*, reels out studies comparing this generation of students with prior generations, finding that

“they don't know any more history or civics, economics or science, literature or current events,” despite all that available information.

Here is a third possibility, the emergence of what I call the *hybrid mind*.

Recent studies of the human senses—including a cluster of spatial senses—back up that statement.

Scientists who study human perception no longer assume we have only five senses: taste, touch, smell, sight, and hearing. The number now ranges from a conservative ten to as many as thirty human senses, including proprioception (awareness of our body's position in space), echolocation, and a more acute sense of smell. Each is a doorway into learning—to *knowing*.

The ultimate multitasking will be to live simultaneously in both the digital and physical world, using computers to maximize our powers to process intellectual data and natural environments to ignite all of our senses and accelerate our ability to learn and to feel. In this way, we could combine the “primitive” powers of our ancestors with the digital speed of our teenagers. Evolution may (or may not) be out of our hands, but as individuals we can accept and celebrate our technological skills at the same time that we seek the gifts of nature essential for the realization of our full intellectual and spiritual potential.

The best preparation for the 21st century, therefore, may be a combination of natural and virtual experience. An instructor who trains young people to become the pilots of cruise ships describes “two kinds of students, those who are good at video games, who are terrific

The ultimate multitasking will be to live simultaneously in both the digital and physical world.

with the electronic steering; and those who grew up outside—they're far better at having a special sense of where the ship is. We tend to get one or the other kind." The first kind of student, he says, has a talent he prizes. "We have a lot of electronics on the ship." The second kind of student has another talent he needs. That student, using a wider range of senses, "actually knows where the ship is." The ideal pilot, he says, is the person who has a balance of high-tech and natural knowledge: "We need people who have both ways of knowing the world." In other words, a hybrid mind.

The Uncommon Core: Creating a New Education Ecology

There are far more ways of knowing than technological or nature-based, but we do need more diversity in how and what we come to know. Finding an appropriate mix of technology and reality should be at or near the top of our list of our educational priorities at home; at primary, secondary, and higher education; and in our libraries and every other place of learning.

Currently, the force of economics is on the side of technology and standardized efficiency, even for the youngest children. Some preschool chains promote themselves by providing every child with an iPad. One over-the-top—or, actually, under-the-bottom—product is the "Digital iPotty with Activity Seat for iPad" for potty-training infants. It comes with "a built-in iPad stand," and can, according to the manufacturers, be used with "dozens of helpful potty training apps." The *Washington Monthly's* special report, "The Next Big Test," projects that, thanks to artificial intelligence, the need for standardized testing will fade away, replaced by what proponents call "stealth assessment"—nonstop electronic monitoring of students, employing systems

Leaders in the tech industries know they need time to reboot, and that time in nature stimulates their creativity

The more high-tech we become, the more nature we need.

similar to those that grocery chain stores now use to track inventory. Most learning will occur through cutting-edge software "often in the form of video games"—Grand Test Auto, as the *Monthly's* headline writer calls it. Or at least that's the goal.⁷

Children and adults who work and learn in a dominating digital environment expend enormous energy *blocking out* many of the human senses—including ones we don't even know we have—in order to focus narrowly on the screen in front of the eyes. That's the very definition of being less alive. What teacher or parent wants his or her child or student to be less alive? Who among us wants to be less alive?

Achieving a state of balance in our schools should be a worthy goal for business and social entrepreneurs, for educators and physicians, architects and urban planners, for parents and policy-makers.

I am not anti-tech. I acknowledge the worth of digital technology in our schools and in my own family. Leaders in the tech industries could play a leading role. It's surprising how many of them own off the-grid cabin retreats. They know they need time to reboot, and that time in nature stimulates their creativity. For their own kids, some technology leaders have adopted these limits: thirty minutes to two hours of tablet or smartphone use a day; allow ten- to fourteen-year-olds to use computers on school nights, but only for homework; make a distinction between consuming and creating on these devices. A *New York Times* reporter once asked Apple's Steve Jobs, "So, your kids must love the iPad?" His answer: "They haven't used it. We limit how much technology our kids use at home." Yet, few tech leaders have spoken up for nature-based learning or balance in our schools. They have product to move.

Today, there is no economic force strong enough to counterbalance the economic interests of technology in education. Only a social movement—a new nature movement—can stand up for balance, and it has already arrived. We see it in the growing number of nature-centered preschools, in the proliferation of natural schoolyards, in the growing skepticism among parents about over-reliance on testing, on the growing body of scientific evidence that shows the importance of natural world experiences to healthy child development, physically, emotionally, spiritually, and cognitively. Now comes word of a new, six-year study of 905 public elementary schools in Massachusetts reporting higher scores on standardized tests in English and math in schools that incorporate more nature.⁸ Similarly, preliminary results from a yet-to-be-published ten-year University of Illinois study of over 500 Chicago schools show similar findings, especially for students with the greatest educational needs. Based on that study, the researchers suggest that greening our schools may be one of the most cost-effective ways to raise student test scores. And we see the potential for a new educational ecology in the hunger among so many teachers for the healing power of nature in their own lives. Canadian researchers report that teachers who get their students—and themselves—outdoors can reignite their own energy and enthusiasm for teaching. Schoolteachers, like parents, receive the same benefits to physical and psychological health and cognitive functioning as children do, when they spend more time outside.⁹

Educators cannot achieve the new balance alone. That's one reason why the regional and state "No Child Left Inside" campaigns and the broader children and nature movement around the country are so important: By building community support, they create a wider constituency for place-based education, bringing social and political heft to the table.

In *The Nature Principle*, I make the case that the future will belong to the nature-smart—those

individuals, employers, and political leaders who develop a deeper understanding of nature and balance the virtual with the real. It's time for a new educational ecology. One of its precepts should be this simple idea: The more high-tech we become, the more nature we need.

ENDNOTES

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Anthroposophy and Waldorf Education – A Dynamic Relationship

Jost Schieren

Among educational academics Waldorf education tends to be viewed with a considerable degree of critical skepticism. Their criticism is not focused on the education as such, but upon the worldview behind it, namely, anthroposophy. Klaus Prange (Prange 1985, 2005), Ehrenhard Skiera (Skiera 2009), not to speak of Heiner Ullrich (Ullrich 1986, 1988, 2015), all incisively stress the fact that Waldorf education's dependence on anthroposophy renders it unacceptably "worldview-laden." In his latest publication, Ullrich lays out the details occasioned by this basic critical stance. He singles out Waldorf education as having an ideological bias unique among the various forms of progressive education: "It is founded entirely upon the view of the human being and of the world contained in Rudolf Steiner's anthroposophy. This determines not only teaching methods, but also, in diversely inter-related ways, the content of the curriculum and the subjects taught. No other type of school from among the classical canon of progressive education has a culture molded by a single worldview to the extent that the Waldorf school has been." (Ullrich 2015, p.173) Ullrich is concerned to show not only that anthroposophy underlies an otherwise positive educational movement, but that it also dominates the latter in every facet of its operation. The critical verdict upon this ideology problem is expressed with considerable vehemence, a clear impression of which is conveyed by the following lengthy quotation:

In the account of the specifics of what goes on in a typical Waldorf school the immense

Ullrich singles out Waldorf education as having an ideological bias unique among the various forms of progressive education.

significance of the anthroposophical worldview has become clear in many respects. Recall particularly the architectural form of the school buildings, styled according to the essential nature of the human being, the collegial style of governance organized in accordance with the idea of the threefold social order, the doctrines of seven-year developmental periods and the temperaments (in relation to the four basic soul-forces) that guide the work of the class-teacher, the main lesson methodology that encompasses nocturnal processes of exarnation and incarnation, the curriculum based upon cultural epochs that follow the progressive history of consciousness, and Goetheanistic, alchemistic science teaching resting upon the notion of essential correspondences between the human being and nature. In the face of all this, the conclusion is inescapable that anthroposophy (anthroposophical spiritual science) provides the master key to understanding the whole gamut of Waldorf education from its curriculum to its classroom practice. The founder of anthroposophy is Rudolf Steiner (1861–1925), who remains to this day the exclusive figurehead¹ for the disciples of his worldview. (Ullrich 2015, p.91)

According to this view, then, Waldorf education is thoroughly determined by anthroposophical ideology. With this Ullrich is following on from his own dissertation of 1986 as well as Klaus Prange's influential book *Erziehung zur Anthroposophie*.² (Prange 1985) With this book the educational theorist Prange

set the prevailing tone of academic opinion concerning Waldorf education. While Ullrich follows this tradition, he does so without falling into the aggressive note of outright rejection and the missionary zeal of warnings about covert indoctrination which many parts of Prange's book are prey to. What Ullrich does is to characterize Waldorf education as suffering from the massive influence of a particular worldview on several levels: of personnel (teacher mentality), of content (curriculum), and of the didactics of methodological practice (image of the human being).

Compared to Prange, Ullrich is somewhat ambivalent: He sees Waldorf education's whole aesthetic and humanistic approach as positive—the fact that it is experiential and based on personal commitment to a high pedagogical ideal. He accords due recognition to aspects such as holding back on the pace of development, the cherishing of each pupil's individual personality, and the personal closeness of teacher-pupil relationships. On the other hand, however, he assiduously applies himself to the task of clearly delineating how anthroposophy acts as the ideological determinant of Waldorf education. In contrast to Prange, his intention is not to sound a voice of warning, but simply one of clarification. This is evident, for example, in the fact that he very fairly rejects the charge of racism leveled at anthroposophy:

That Steiner was not the typical, anti-Semitic racist his polemical critics are very happy to see him as, is documented at the very least by the fact that many Jews were members of the Anthroposophical Society and were able to retain their membership right up to the time when the society was banned by the Nazis. (Ullrich 2015, p.147)

Anthroposophy is seen as an antiquated system of dogmas, based around teachings about a so-called spiritual world.

Nonetheless, anthroposophy is Waldorf education's problem. His criticism of it may be summarized in the following points (Ullrich 2015, p.143f):

- It is mystical and in essence unscientific
- It uncritically oversteps the bounds of reason
- It is a form of gnosis which undermines the distinction between knowledge and belief
- It is driven by the desire for a "unified totality of knowledge"
- Further critical aspects are the removal of limits to knowledge and to the scope of the human personality in place of modest self-restraint
- He is emphatic that the acquisition of knowledge is not based on freedom, since human thinking in the process of what

Steiner proclaims as intuition means submission to cosmic thinking, or, in the practice of ethical individualism, to the cosmic plan (Ullrich, 2015, p.129f)

- Contrived notions of causality in connection with the ideas of karma and reincarnation are stressed (Ullrich 2015, p.110)

Thus, according to Ullrich, it is anthroposophy and not Waldorf education that is the focus of academic criticism. Anthroposophy is seen as an antiquated system of dogmas, based around teachings about a so-called spiritual world; these teachings, springing from the mystical visions (or delusions)³ of one man, are therefore untestable and establish a form of metaphysical determinism which flies in the face of the modern principle of individual freedom. This is a thoroughly devastating view. Judged in this way Waldorf education is genuinely flawed. It is incapable of development, since it is so evidently dependent upon, influenced, and contaminated by a mere metaphysical construct which runs counter to the modern principles of scientific consensus. Moreover, not only is it thus vulnerable in

theoretical terms, but it is also exposed to far-reaching political, legal, and economic consequences (accreditation for courses and tertiary institutions, approval of teachers, access to funding, etc.).

All this raises the question of how, given the charge of its being scientifically beyond the pale, anthroposophy's relationship to Waldorf education can be defined at all. What role does anthroposophy actually play in Waldorf education? Is there a viable and scientifically acceptable way of dealing with this question?

The Worldview Problem

The first thing that must be said here is that Waldorf education's scientific deficiency is not merely a demarcation problem of the scientific establishment associated with its narrow concept of science, as eager defenders of the Waldorf position are fond of asserting,

but is also to some extent self-inflicted. Anthroposophy has been and is treated by its adherents and propagated by them as if it were a path to salvation. For a long time the only approved way to receive the works of Rudolf Steiner was in a meditatively cultivated spirit of uncritical devotion. This involved an exclusive system of communication

among insiders carried on in hermetic forms of speech and thought with a complete lack of conceptual clarity or critical detachment. Rudolf Steiner's so-called esoteric knowledge was accorded the status of unquestioned truth under the rubric of an expanded (in other words, not materialistically restricted) concept of science and thus given the seal of approval as a valid theoretical basis for Waldorf education. That this truth claim was simply a band of disciples defending their interpretation of, and loyalty to, the words of their great model is something that was scarcely noticed by both advocates and critics

of Waldorf education until relatively recently. As a matter of fact Rudolf Steiner himself was certainly aware of Waldorf education's "worldview" problem, and emphatically warned that anthroposophy should not flow directly into the schools. The point arises repeatedly in his works, and there are many passages where he clearly demands quite a different approach to receiving and working with anthroposophy based on individual critical awareness. In a lecture he gave on 15th August 1923 in Ilkley (Yorkshire, England), four years after the founding of the first Waldorf school, he said:

This general human principle within the process of education, the workings of which I was obliged to characterize for the full range of classes, must express itself in a Waldorf school in such a way that the school does

not represent any particular religious or philosophical affiliation, nor any particular worldview. And, of course, it was especially necessary for a system of schooling which has developed out of anthroposophy, as the Waldorf school has ... , to work towards strict avoidance of either becoming a school of anthroposophists or being an anthroposophical school. This is

Rudolf Steiner's so-called esoteric knowledge was accorded the status of unquestioned truth under the rubric of an expanded...concept of science and thus given the seal of approval as a valid theoretical basis for Waldorf education.

completely out of the question. We could also put it like this: Every day must involve striving anew ... to avoid falling into anthroposophical one-sidedness ..., through the misplaced zeal of one teacher, say, or through the general sympathy for anthroposophy which exists among Waldorf teachers as a matter of course. The idea of man per se, not man as seen by a particular worldview, must be the sole guiding principle as regards pedagogical method in the Waldorf school. (Steiner 1986, p.203f)

This shows that Steiner was fully aware of the problem of anthroposophy's being seen as dogmatic and accused of being a sect, and had quite consciously sought to distance Waldorf education from such a possibility. In this connection, in a public talk, this time given in Penmaenmawr in Wales on 19th August 1923, he said:

Our approach to pedagogical method is to develop it in the most appropriate way from the anthroposophical movement. The Waldorf school in Stuttgart, where this methodology is applied, has no hint of a sect about it, nor of anything dogmatic, nothing, indeed, of what the world is fond of calling an anthroposophical school. For we do not bring anthroposophical dogmatism into the life of the school; rather we seek to develop methods that are in keeping with general human principles. (Steiner 1991, p.172)

This commitment to a striving towards neutrality as regards worldview affiliation, even though it is something that is not fully achievable in any system, and the establishing of suitable distance between anthroposophy and the practice of Waldorf education are something that its advocates are generally in favor of. Although this attitude to the incursion of anthroposophy into Waldorf schools is widely held, within Waldorf education itself, and especially in the realm of teacher training, commitment to such neutrality and distancing is seldom recommended.

Anthroposophy and Science

Is there, perhaps, an adequate way to describe the ambivalent relationship between anthroposophy and science? Rudolf Steiner employed the concept *spiritual science* (*Geisteswissenschaft*), and with this term intended something fundamentally different from the normal usage, for with him it was not just a way of distinguishing the natural sciences from those dealing with culture (fields such as

philosophy, history, literature—what in English would be called the humanities), but claimed to be a science of the spirit. This semantic difference in itself creates problems of understanding. Added to this is Steiner's insistence that his form of spiritual science is carried out according to the strict criteria of modern science. Essentially this means that all its published utterances should be based on empirical observation. Since, however, his object of observation is super-sensible, Steiner steps outside the normal scientific framework. Steiner's claim to a scientifically tenable form of knowledge that satisfies the modern conditions of rationality founders upon the demarcation criteria of knowledge postulated by science.

This dilemma has still to be resolved. Anthroposophy is considered simply as a belief system rather than a body of knowledge. On the anthroposophical side various attempts have been made to come to terms with this problem:

(a) Rejection of modern science and a closing of anthroposophical ranks

This tends to be the position of anthroposophical traditionalists. They regard dialogue between anthroposophy and science as impossible. They feel that the narrow materialism of science as it is pursued in the universities is in principle incapable of coming to terms with the actual scope of Steiner's works. As a consequence they hold themselves apart from any efforts at rapprochement with the world of science, seeing it even as a kind of ingratiating that can only be to the detriment of anthroposophy. From among the members of this inner circle come works of secondary anthroposophical literature, some of which follow anthroposophical paths of thought in a spirit of subtle, self-critical reflection, while others are much less critical, treating utterances of Steiner as truth and building meditations of their own upon them. The latter, without any attempt on the author's part to ascertain whether his disquisitions are in need of correction, are very likely to range over esoteric terrain.

(b) Expanded concept of science

A further approach seeks to bring arguments for paring away the current limits of science in order to establish a new expanded conception of it. The prominent names here are Helmut Kiene with his book *Grundlagen einer essentialen Wissenschaftstheorie* (Kiene 1984), and Marek Majorek with his dissertation, “Objektivität. Ein Erkenntnisideal auf dem Prüfstand” (Majorek 2002) and his latest publication, *Rudolf Steiners Geisteswissenschaft: Mythisches Denken oder Wissenschaft*. (Majorek 2015) Undoubtedly it takes an immense amount of effort to attempt to introduce and defend a new epistemological paradigm. So far such efforts have found no recognition among the figures of the scientific establishment. The problem lies in the fact that such works affirm essentialist forms of thinking with a claim to either truth or objectivity. In this they stand counter not only to current basic epistemological assumptions, but also to the mentality of the modern human being, which is not concerned with fixed truths and unassailable objectivity, but rather has a concept of knowledge as open-ended process, working tentatively, by trial and error, and at all events approaching the features of the object of study with due approximating caution. However strong the inner evidence-based conviction of having found something out might be, it cannot be used in any valid sense as an external argument, but only as an integral source of transformational energy in the subject’s relationship with the world. For the asserted truth, advanced with however much conviction, is always the “false” truth. There is little hope of anthroposophy’s hitting the mark in this way.

(c) Research into the esoteric

A further attempt to smooth the relationship between anthroposophy and science consists in grafting the two together by appealing to

modern esoteric research. The publications of Wouter J. Hanegraaf (Hanegraaf 2005, 2006, 2008, 2012) and Antoine Faivre (Faivre 2001) are regarded by Johannes Kiersch (Kiersch 2008, 2011, 2012, 2015), Karl-Martin Dietz (Dietz 2008), and Lorenzo Ravagli (Ravagli 2014) as providing a timely opportunity for rehabilitating anthroposophy within the context of science. Hanegraaf and Faivre discuss, from a cultural-historical perspective, a variety of esoteric movements that are either ignored or disapproved of by the positivistic mainstream. Their intention in doing so is to describe, in a way untinged by any feeling of distaste, the specific forms taken by gnosis and esoteric

Steiner intended anthroposophy as a way of going beyond old forms of consciousness ... and of arriving at a spiritual worldview on the basis of a modern concept of knowledge.

knowledge, and to assign each one its appropriate place in the history of culture. In this way old esoteric forms of knowledge have been subjected to a modern rational treatment. As important, worthy and interesting an undertaking as this is, to subsume anthroposophy within the framework of

such studies with a view to thus relieving its scientific isolation raises the question of whether underlining anthroposophy’s kinship to other gnostic streams such as medieval mysticism, theosophy, and Rosicrucianism does justice to its own special qualities and intentions. It goes without saying that from a historical perspective anthroposophy has many elements in common with other esoteric streams, but it also has clear distinguishing features. What it shares with them is that it is centered upon a spiritual understanding of the human being and the world. But equally central is the fact that Steiner intended anthroposophy as a way of going beyond old forms of consciousness based on approaching spiritual phenomena in a more passive, feeling-oriented way, and of arriving at a spiritual worldview on the basis of a modern concept of knowledge. Neither the

historical forms of gnosis nor the popular New Age expressions of modern spiritual needs can be squared with anthroposophy. It upholds the free, subjective individualism of the Enlightenment, which is the signature of the modern human being, and is not about to sidestep this through the metaphysical determinism of an *ersatz* spirit-world.

With the attempt to encompass anthroposophy within the framework of modern esoterics research goes the danger of its being reduced to one more esoteric stream among many others, without its main modern distinguishing feature—namely, its orientation towards knowledge grounded in freedom—having been made clear enough. In keeping with this general approach, Johannes Kiersch stresses the fact that Waldorf education is characterised by its *esoteric* pedagogy, while at the same time putting forward the concept of a *profession-specific esoteric background*. The danger here is that the supposed benefit of scientific recognition of anthroposophy (and it must be said in this connection that the work of Hanegraaf and Faivre does not emanate from the field of education) comes at a cost: Its prime feature, namely the task of developing a modern form of spiritual consciousness, will not be sufficiently apparent.

(d) Applying scientific criteria to the works of Rudolf Steiner

Yet another way of dealing with the relationship between anthroposophy and science has recently become more and more prevalent. The point here is not to argue for [see para. (b)] or against [see para. (a)] the reconcilability of the two, but to treat anthroposophy itself scientifically, rendering it the object of scientific discussion. The main proponent of this approach, from a variety of perspectives, is Christian Clement, who has laid the foundations of a new academic profile for anthroposophy with his critically annotated editions of Steiner's works. Anthroposophy has thus been turned into a regular research object, and the critical

detachment that this necessitates means that Steiner's words are not regarded as self-evident truth. This basic scientific attitude to anthroposophy with the healthy detachment it involves, is not prey to the often-unconscious presumption that the reader is free to extract whatever he wishes from the esoteric contents of Steiner's works.

The approaches presented above show how the problematical relationship between anthroposophy and science can be "tuned" in various ways. There are no doubt other possibilities that could be mentioned, nor is it the case that authors can be clearly singled out as belonging purely to one approach or the other. According to authorial inclinations there will, as a matter of course, be overlaps.

A modern and defensible approach (as described, for instance, under (d)) will of necessity develop a different understanding of anthroposophy. One that is not marred by narrow dogmatism and metaphysical credulity, but instead has a basic phenomenological ductus through recourse to Steiner's early works.

Steiner's early epistemological works (see Steiner 1886/1979 and 1918/2005) are concerned with the phenomenology of consciousness based upon a method designated by him as *inner observation* (cf. Witzenmann 1985). Here Steiner is following on from Goethe's research method of imaginal judgment (cf. Schieren 1997), transferring its application from natural to mental phenomena. The crucial thing here is that this philosophical approach does not entail any pre-critical claim to the status of truth, but in the sense of a modern epistemological theory endows human cognition with the ability only to arrive at ontological approximations. In subsequent works Steiner was able to pursue this approach only to a limited extent, and laments this fact at one point in his autobiography, *The Course of My Life*.

It is significant that in certain lectures given later (1920–1921) he returns to this philosophical

position by stressing the phenomenological aspect of anthroposophy: “phenomenology, that is the scientific ideal expressed in anthroposophy.” (Steiner 2005, p.318) And on another occasion he maintains that *spiritual science*

is nothing other than phenomenology ..., which does not stop at setting single phenomena side by side, but tries to read them in context. It is phenomenology, and we do not offend against it by going speculatively beyond the phenomena. Rather, in so doing we are quizzing them—not merely in terms of parts, but of whole contexts—as to whether they express something of relevance for a certain inner activity. (Steiner 2005, p.419)

To construe anthroposophy as phenomenology, and as such to treat it critically and scientifically as regards its knowledge value, is to accord it a completely different mode of reception than that which has held sway in the last hundred years over proponents as well as critics and has led to the formation of the familiar ideological fronts. Here it is a question of creating a whole different culture of interpretation. In keeping with this, there is currently no doubt among official representatives of Waldorf education that, on the one hand, now and in the future a completely different tone needs to be adopted and, on the other, they must be ready to engage in critical discussion of its theoretical foundations. This is in no way contrary to anthroposophy. Its own claim to the status of knowledge is responsible for the fact that it finds itself the object of epistemological and self-critical debate within a rational continuum.

Anthroposophy in the Context of Waldorf Education

What does this imply for Waldorf education? Quite naturally, in the context of Waldorf education, anthroposophy has to come out of its “inner closet.” It takes on a social aspect,

and thus must orientate itself to society’s criteria and standards. According to the laws of different countries, it must satisfy regulations of variable strictness involving varying degrees of compromise. In many of them a more or less *pure* form of Waldorf education is possible. In others—as, for instance, in Germany—the state regulations in relation to the licensing of teachers and to curriculum requirements are clearly prescribed. Things are somewhat different in medicine, which, like Waldorf education, is also a field of anthroposophical practice. Here it is subject worldwide to a set of stringent, scientifically defined criteria. Thus anthroposophical medicine was treated right from the start as complementary to rather than as a substitute for regular medicine. The upshot of this is that every anthroposophical doctor has to have gone through a normal medical training. In comparison to this Waldorf education has much more freedom of maneuver. There are teacher-training centers that have traditionally worked more or less independently of state requirements and scientific standards. This is why the question of scientific status is more controversial and receives more academic attention within the ranks of Waldorf education than it does within those of anthroposophical medicine, which has a more natural affinity with science.

What role, then, do the contents of anthroposophy play in Waldorf education? It would be easy to come to the conclusion that the more scientific orientation and accommodation to external requirements there is, the less anthroposophy there can be. This would make it more difficult to practice genuine Waldorf education. It would in effect become the victim of the academic educational mainstream. Tried and tested aspects of Waldorf education, such as early language teaching, better teacher-student relationships, experiential teaching, and so forth, would, of course be adapted and kept. The incomprehensible anthroposophical ballast, however, would be jettisoned. Within

Waldorf circles this is widely seen as a real danger. In addition there is the fact that Waldorf education as it actually exists in Germany is in a considerably “secularized” state. About 50% of its teachers have had no Waldorf training and consequently have only a rudimentary acquaintance with the principles behind the type of school at which they are already teaching.

This is why there are regular calls within the Waldorf movement for a deepening of the work on the fundamental principles, so that the genuine core of Waldorf education may not be lost.

There is no easy solution here. On the one hand we have central anthroposophical elements such as reincarnation, the structuring of the human being into a series of “bodies,” development in phases, the doctrine of the temperaments and the path of spiritual training, all of which are non-starters in both scientific and social contexts, and are scarcely capable of communication. Thus Waldorf education remains offensive and vulnerable to attack. It appears to be permeated by anthroposophical dogma. And on the other hand the loss of anthroposophy means the dilution of Waldorf education and the technocratic appropriation of some of its traditional elements. How can this dilemma be avoided?

Epoché or Suspended Anthroposophy

The question of the relationship between anthroposophy and Waldorf education is often considered in *absolute* terms. The thing here is that the one should make its mark upon the other in a *one to one* fashion. Another approach is to weigh up the extent to which it is appropriate for anthroposophy to exert an influence upon Waldorf education. As previously mentioned, Rudolf Steiner had explicitly warned about the problem of anthroposophical dogma having too far a reach in this context, and thus stipulated

This is why there are regular calls within the Waldorf movement for a deepening of the work on the fundamental principles, so that the genuine core of Waldorf education may not be lost.

that Waldorf schools should not be the vehicles of any particular worldview. This implies not only that anthroposophy should not be any part of what is taught in Waldorf schools, but also that it should not be allowed to determine the structure of school-life. Thus where scale of influence is concerned, we are talking more about restraint than anything else. We could also speak of a

suspension of anthroposophy. This has methodological implications.

The central characteristic of phenomeno-logical awareness is that it refrains from applying pre-conceived ideas to a given field of experience. It schools our awareness when, in the act of attention to some object we are seeking to know, we critically reflect upon the many ways in which we are predisposed to view it. And it does not matter, initially, where these predispositions come from. Goethe, for instance, writes in his famous essay “Der Versuch als Vermittler von Subjekt und Objekt” (“The experiment as mediator between subject and object”):

The human being takes more delight in the mental notion of a thing than in the thing itself; or more correctly, we take joy in something only insofar as we can form some idea of it. It must fit in with our mental habits, and however we might try to elevate our way of thinking above the common level and to purify it, it still remains simply that—a way of thinking. ...

The basic stance of phenomenology is to submit received and pre-formed ideas to critical reflection. Edmund Husserl speaks in this connection of epoché, the methodological relinquishment of fixed ideas.

Rudolf Steiner and anthroposophy belong—as already mentioned—to the tradition of this phenomenological method. Steiner’s

understanding of art and his aesthetics are also marked by this restraint motif. For him the point here is not that anthroposophical subject matter is presented figuratively in works of art. In his aesthetics Steiner strongly opposes the idealist principle—for holding which he reproaches the idealist thinkers of the Goethean era, especially Schelling and Hegel—that beauty is the sensory manifestation of the Idea. Rather his view is that beauty, and therefore art, is the ideal expression of the sensory world itself. (Steiner 1985, p.27f) His actual words are:

And this is something totally different from the idealizing tendencies of German aesthetics. It's not "the idea in the form of a sensory phenomenon," but exactly the opposite, "a sensory phenomenon in the form of the idea." The content of beauty, its underlying substance, is always something real, something immediately actual, and the form of its manifestation is the ideal. The correct view, then, is precisely the opposite of what German aesthetics maintains; the latter has simply turned things upside down. (Steiner 1985, p.32)

In Steiner's sense art is not about the transmission of particular subject matter. It is not a vehicle for any kind of ideal, but must be effective and convincing in itself, out of its own aesthetic, sensory power.

With his concept of art, developed primarily in the period from 1914 to 1918, Steiner could be said to have finally separated himself from the ideological "baggage" of the Theosophical Society. As he then began—in 1918—to develop the practical work in a variety of fields (anthroposophical medicine, biodynamic agriculture, Waldorf education), it was the requirements and laws of each particular area of practice that stood in the foreground.

Anthroposophical concepts are best used heuristically in order to see if they give a deeper insight into how to meet a specific pedagogical situation.

Accordingly, the point of Waldorf education is not to be a vehicle for the practical realization of anthroposophical teachings on the nature of the human being, but much more to create the best possible conditions for the development of children and adolescents. It is all about the child. Just as art must do its work on its own terms and not through imported subject matter, so Waldorf education has to prove its effectiveness through its pedagogical successes in kindergartens, schools, and other associated training institutions, and not through its advocacy of certain dogmatic, ideological precepts. Within the context of Waldorf education, anthroposophy does not have a *pure status*, but only an *applied status*; it serves the development of a good form of schooling.

To clarify what is meant here, let us call to mind Lessing's "Parable of the Rings." It is concerned with the central question of the value of religion. The answer the parable gives is that religions have no absolute value in themselves, but only a developmental value. They show their value by helping the individual to become a good or a better person. By the same token, anthroposophy within the context of Waldorf education has value only insofar as it provides help for the teachers in their efforts to improve their understanding of the students and to create a better match between the pedagogical profile of the school and the developmental requirements of its students. Should this not succeed on account of anthroposophy's being used merely as a dogmatic conceptual framework, then it will have lost its value.

Worldview as a Challenge to Develop Situational Awareness

Anthroposophy can be an acceptable presence within Waldorf education as a form of consciousness in keeping with phenomenology. The method of "inner observation" developed

by Rudolf Steiner is a phenomenology of consciousness by means of which human cognition becomes aware of its participation in the construction of reality and encounters its various levels out of an exalted ethic of knowledge. This does not involve the use of any kind of pre-formed (or even anthroposophical) concepts, but rather the actualization, through intense creative activity, of concepts that penetrate ever more deeply and authentically into the area of reality of current concern.

The actual value of anthroposophy lies in the fact that it does not operate in terms of narrow, fixed conceptual schemata, but strives to engender the broadest and most flexible forms of thinking possible. Anthroposophy is best understood as method.

It does not represent a fixed worldview, and thus avoids the narrowness of one such as materialist reductionism, but without degenerating into a tissue of metaphysical phantasms or resorting to spiritual determinism. It is a method of self-critical,

productive knowledge acquisition, employing flexible concepts and thought-forms in an effort to effect an accommodation, in the Goetheanistic sense, between the conditions of the object of knowledge and the act of knowing. A worldview—if anthroposophy is taken as the model—is not a rigid conceptual construct, but an extension of cognitive capacity; it is a challenge to develop situational awareness. Faced with the riddle of an individual student or a whole class, it would be best for the college of a Waldorf school not to act in strict accordance with so-called models of human nature (seven-year developmental phases, temperaments and the like), but simply to use such concepts heuristically in order to see if they give a deeper insight into how to meet a specific pedagogical situation.

Here the significance of anthroposophy lies in the transformational power it possesses for the personal development of the individual teacher.

Personal Development of the Individual Teacher

A further aspect, which can also be regarded as an influence upon Waldorf education, lies in the many ways anthroposophy provides an impulse towards meditative personal development in the individual teacher. Qualities such as patience, emotional equanimity, good powers of (as far as possible) unbiased observation, imagination, and a rich ability to generate ideas, not to speak of a sense of humor and a cheerful, enthusiastic disposition are all character traits which make a good teacher. How such qualities are acquired, if they are not present by nature or have not been gradually developed out of the every-day challenges of the

teaching profession is hardly a central topic of teacher training at universities. For Waldorf education such qualities are the heart of the matter. This is where anthroposophy has an important role to play, but again not in dogmatic, ideological form, but as a store of practical activities, artistic processes, and meditative

exercises geared towards personal development. Here it has simply an applied—or, in terms of the “Parable of the Rings”—a developmental value. In this connection the significance of anthroposophy lies solely in the transformational power it possesses for the personal development of the individual teacher. If a teacher succeeds, by means of anthroposophy, in improving those personal qualities mentioned above as of key importance to the teaching profession, then it would have proved its worth. In his study “Ich bin Waldorflehrer” (Randoll 2012) Dirk Randoll has shown that many teachers value anthroposophy for just this reason. Admittedly there is a narrow distinction here between the *methodological* value of anthroposophy and the associated, hasty, uncritical acceptance of its contents. This demands a high degree of vigilance and the ability to affect the *suspension* previously described.

Conclusion

To conclude, the above-described dynamics of the relationship between anthroposophy and Waldorf education could be summed up in an image: The Greek hero, Admetos, upon asking for the hand of the princess Alcestis, was given, by her father the king, the task of harnessing a lion and a wild boar together to one chariot. If he succeeded he would win Alcestis as his wife. Admetos accomplished the deed.

Pairing anthroposophy and Waldorf education is very like harnessing such a team, thus placing antagonistic tendencies in the service of a common task. The lion in the picture—anthroposophy as a content-rich worldview—needs to rein itself in. Epoché, a holding back or suspension of anthroposophy is the result. Within Waldorf education, anthroposophy has no value as regards content, but only as regards method. It serves the development of a good form of schooling, and the qualitative evaluation of what constitutes “a good form of schooling” is the sole prerogative of empirical research. And Waldorf education, which in the picture passes for the wild boar, in moving in step with factors conditioned by the times, by culture and by science, and being particularly attuned to the needs of children and adolescents, needs to be taken seriously and respected in its own terms, so that chariot and team can make headway in the service of good schooling.

ENDNOTES

- 1 Translator's note: The word used in German here is *Führer*.
- 2 Loosely translated this could be rendered as “Schools for Anthroposophy.”
- 3 Cf. Helmut Zander (Zander 2007), who repeatedly states that visions of Rudolf Steiner's claimed as original are nothing more than disguised quotations from other sources.

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Waldorf Teachers – Artists or Mooncalves: Parzival and the New Knowledge

Norman Skillen

As a mere scientist you are just a mooncalf.¹

Only ... when your knowledge takes on artistic form do you become a human being.²

– Rudolf Steiner

The 2015 National Teachers Conference of South Africa closed with a lecture in which the Waldorf school was described as a “total work of art” (*Gesamtkunstwerk*), with the teachers—each in their individual way—being its co-creators. Such grand words are entirely appropriate for the closing lecture of a national conference, and reminding ourselves about such high ideals is absolutely necessary, but, in being uttered, the words call up the question: How close are we to realizing this in real, rather than merely cosmetic terms, and what does it really mean?

To answer the second part of the question first: What it means is a school composed of the collective actions of a group of teachers whose knowledge has, in Steiner’s sense, “take[n] on artistic form.” This is easy to say, but doing it is another matter. In this, the answer to the first part of the question is already implied, for how many of our teachers could say of themselves that they have achieved this ideal state, or that they even understand what is meant by it?

So the big question here is: How does knowledge become artistic?³ Or even: Is there such a thing as artistic knowledge, and if so, what is its nature and significance?

I would like to address these issues with a consideration of the Parzival story as a possible source of artistic knowledge. Initially, however, I need to back up a bit, for before our knowledge

can “take on artistic form,” we need a better idea of what is involved here.

The quotation cited above becomes particularly poignant when it is seen in relation to the crisis in modern biology. The crisis in modern biology? Well, does a constant stream of findings that call the central theoretical framework of biological science into question constitute a crisis? Doubts are being voiced on all sides in many leading journals, and the interesting thing is that these doubts are being fueled by the new experimental techniques available to biologists. In other words, our ability to analyze genomes and their associated processes in detail is what has created the crisis. Multiplying the data is not going to solve it. Perhaps it is time to take the step from “mooncalf” to “human being.” This will require not a shift in experimental technique, but a shift in epistemology.

Is there such a thing as artistic knowledge, and if so, what is its nature and significance?

My awareness of this I owe almost entirely to the writings of Steve Talbott.⁴ In a series of articles that have appeared over the past ten years, he has documented recent developments in molecular biology, and the story he tells is highly illuminating. In doing so he has provided us with a resource of inestimable value, and one which teachers worldwide should be aware of, especially if their knowledge is to “take on artistic form.” What he has been doing is working his way through thousands of scientific papers published in molecular biology journals, summarizing and commenting upon what he finds there. Essentially, he has documented the continuing fall-out from the Human Genome Project. This, if you remember, was going to deliver us the “holy grail” of biology—full molecular working

knowledge of the human genome. It has done nothing of the kind. Instead, it has done something much more exciting and unexpected. It, and the research following on from it, has uncovered untold layers of complexity at the intra-cellular level, and through these revelations the “unquestionable certainties” of the gene-centered theory of evolution (i.e., neo-Darwinism), which have dominated biological thinking for the last 40-odd years, have begun to totter: DNA can no longer be regarded, in any sense, as the master molecule of life; epigenetic effects upon the genome—formerly ruled out in principle—are now commonplace; the concept of the gene as a causal reality and its code nature are being called into question; the notion of random mutation as the driving force of evolutionary change is now virtually untenable. In such a climate the standard neo-Darwinian “algorithm” of random mutation plus natural selection is hard to maintain.

Perhaps the greatest discovery, however, has been that everything at the microbiological level—just as much as at the ecological level—is *context-dependent*. As a group of French researchers⁵ recently put it: “It

appears that everything does everything to everything.”

Chromosomes, it would seem, are not rigid, robotic controllers, but rather are enmeshed in a complex, constantly shape-shifting “dance” orchestrated by cellular “music” from many different sources both inside and outside the nucleus. The more this dance is analyzed, the more partners join it, and the less it is susceptible to analysis. As Steve Talbott eloquently puts it: “Having plunged headlong toward the micro and molecular in their drive to reduce the living to the inanimate, biologists now find unapologetic life staring back at them,” and this life seems to be that of the *organism as a whole*. We may well be witnessing the demise of the gene and the rebirth of the organism.

The greatest discovery has been that everything at the microbiological level—just as much as at the ecological level—is context-dependent.

With this discovery—or perhaps I should say, re-discovery—of context-dependency, analytical reason in biology seems to have arrived at an impasse. There are just so many variables, so many regulated “regulators,” so many ways in which the same molecular configuration can mean different things, so many cellular and chromosomal topologies tailored in the moment to fit unique circumstances, that in the end the complex multiplicity of interpenetrating contexts simply defies analysis—and not merely in fact, but in principle.⁶ This state of affairs creates a certain epistemological pressure. If one style of knowledge—analytical reason—is here experiencing the limits of its reach, extending that reach any further will require a different style of knowledge. The extension in question is that of apprehending an ever-widening context, widening to encompass the organism as a whole, and then further. In other words, a style of knowledge is required that can generate knowledge of the Whole.

It is perhaps worth mentioning in this connection another radical aspect of this state of affairs. This is the fact that, having sought the fundamental at the micro level and persistently failed to find it, we are now being forced, by the phenomena themselves, to recognize that the *Whole is what is fundamental*. And how are we to arrive at knowledge of the Whole? Knowledge that does not replace, but rather enhances and extends analytical reason?

The initial answer is that knowledge that has “take[n] on artistic form” would do just this. I realize that this sounds like a rather bland anti-climax, but that is partly the point. This style of knowledge is not necessarily spectacular, but it fits the bill, and how it does this will, I hope, become clear in what follows. Moreover, it would appear that the artistic sensibility that enables a school to be a total work of art and the style of knowledge required

to extend the reach of modern biology are one and the same.

Knowledge of this kind is closely akin to what comes upon us sometimes as a sudden state of heightened awareness.⁷ Such experiences, which have been known as epiphanies ever since James Joyce applied this term to them, are often provoked by a natural phenomenon of some kind—a landscape, the song of a bird, or any number of other phenomena. Whatever the catalyst, what we feel at such a moment is that we have been touched by the intrinsic meaning of some greater presence. We have been visited by the Whole, of which the phenomenon in focus is—while the moment lasts—a particularly striking representation. Experiences like this are entirely individual, but they nonetheless have some features in common: They come to us “at a tangent,” completely unbidden; they are participatory⁸ (in other words, they dissolve our normal alienation from our surroundings, making us feel at one); they are unrepeatable and yet they call forth a longing to repeat the experience. Indispensable as they are, we cannot base a system of knowledge (to say nothing of education⁹) upon the elusive vagaries of spontaneous epiphanies. The question therefore arises as to whether it is possible to induce what might be called the “achieved epiphany.” An answer to this question is given by Goethe:

There is a delicate empiricism that identifies itself so profoundly with the phenomenon that it becomes its own theory. But such an expansion of consciousness belongs to a highly cultured age.

The expansion of consciousness arrived at by the practice of delicate empiricism, which involves the disciplined application of what Goethe calls “exact sensorial imagination,” is

Art is human culture's perpetually forlorn attempt to express some greater reality, and at least it knows that some kind of groping expression is the best we can do.

what I mean by an “achieved epiphany.” The effect of the achieved epiphany is the same as that of the spontaneous one: direct participatory contact with the Whole, through one of its representations. This, of course, does not give us knowledge of the Whole in any analytical sense; rather, what we arrive at is an awareness of super-ordinate presence,¹⁰ which is akin to the enhancement of sensibility produced (or not) by a great work of art, be it musical, poetic, or visual. The Goethean practice of delicate empiricism is, in effect, “knowledge tak[ing] on artistic form.”

This knowledge is never complete; indeed it mostly defies articulation. No one could ever claim to have knowledge of the Whole, but the continual effort—as the poet Louis MacNeice has it—to “eavesdrop on the Great Presences”¹¹ gives us a sense, or inkling of the Whole, which can permeate, inform, and fructify all our thinking. To have a sense of wholeness as it lives in the individual phenomenon upon which our attention is focused is the essence of artistically formed knowledge. There may well be pathways to this other than the Goethean one, but it is clear that if teachers (specifically science teachers) who have to teach their students about the “parts” of nature are to be human beings rather than mere mooncalves, they need to have this living sense of what is fundamental.

While art can no more give us working knowledge of the Whole than can science, art is by far the more realistic in its approach to this problem. Art is human culture's perpetually forlorn attempt to express some greater reality, and at least it knows that some kind of groping expression is the best we can do. Science, driven by analytical reason, is forever trying to eliminate the great mystery by reducing the greater to the lesser. It is the attempt to arrive at the literal, fundamental parts (a.k.a. “basic building blocks”).

If modern physics, and now modern biology, have shown us anything, it surely must be that there are no such “blocks.”¹² The deeper we probe into the “mechanisms” of the cell, the more the mysteries multiply. We look for fundamental parts and instead find fundamental wholeness staring back at us.

One of the great works of art that seems to have been written (I’m not suggesting that it was) with this in mind is Wolfram von Eschenbach’s *Parzival*. I have had the privilege of working with this story for over a decade in a variety of schools and other contexts, and during this time it has become increasingly clear to me that “Parzival” is something of a paradigm of artistic knowledge, as I have been speaking of it here. Many features of the hero’s journey are like stations on a path towards this goal, and I would like to outline them briefly.

Parzival does not have a courtly upbringing. He grows up in the Forest of Soldane, to which his mother had moved with all her household in order to prevent her son from ever learning about knighthood. Instead of courtly life, nature is his teacher. In portraying Parzival’s childhood in this way, Wolfram is saying something rather radical for his time, and also about himself. In another poem he writes:

Every plant, scent, every kind of stone
Is fully familiar, Lord, to you ...
I feel your presence through my senses,
For what is written in books
To me has always seemed strange –
My senses¹³ have been my only teacher.

When we consider that in the medieval worldview nature was the fallen, sub-lunar world of death, temptation, and evil, it is extraordinary to find Wolfram speaking in such terms and making nature the teacher of his greatest hero. Through this natural education Parzival may have

learned much about the seasonal life of forests and their animals, but when—having heard, as was inevitable, about knighthood—he sets off to become a knight, he is still in a state of radical ignorance as to the ways of the world and even of his personal identity. He knows nothing of his family, nor even his own name. His training in the arts of knighthood remedies the former to some extent, but does nothing to allay the latter, although he had at least learned his name.

**In the realm of
participatory
imagination we can
have clarity without
definition, for here
we have the rational
as the servant of
the artistic.**

It is in this state of radical ignorance, which is also a state of openness, that Parzival experiences the ultimate epiphany: He stumbles upon the Grail castle Munsalvaesche (although only later does he learn its name). He comes into this visionary landscape in the true style of the spontaneous epiphany—he has been riding all day (in a love-trance)

without holding the reins and in this way “finds” the castle which cannot be found by diligent seeking, but must be come upon unawares. Here the drama, grandeur, and solemnity of what he witnesses overwhelm him to the point of speechlessness, and although he has a sense of having experienced something of very profound meaning, he has no idea what that meaning is.

Finding himself cursed on all sides for his failure to come to terms with this situation, there awakens in him a very strong desire to find his way back to Munsalvaesche and the Grail, but the experience he was granted, like all spontaneous epiphanies, is unrepeatable. So now the path he follows is necessarily one towards an achieved epiphany, and the rest of the book is the complex story of how this comes about.

The path towards this ultimate consummation is arduous and tortuous, and never are we given the impression that the outcome is a foregone conclusion (which is entirely in keeping with the way things are in real life, where no outcomes are guaranteed). This path requires

dogged determination in the midst of doubt and despair—on the way he meets the allegorical figures of Lady Love and Lady Reason—and it encompasses initiation processes for the book's two main characters, i.e., Gawain¹⁴ and Parzival himself.

From a Goethean perspective the episode involving Lady Love and Lady Reason is highly instructive. First of all, very graphic expression is given to the participatory relationship to the world remarked on earlier. The fact that our perceptual intentionality is active in the *construction* of reality is signified in this episode by the mirroring of Parzival's mental state in the external image of snow—where he is it has snowed, whereas at Arthur's encampment nearby it is flowery May-time. The coldness of Parzival's self-punishing thinking is intensified by the fact that, as he sits there alone waiting out the night, a falcon (lost the previous day by King Arthur's falconers) perches on a branch above his head. Thus we have the striking image of the hero, stuck in his cold, lonely, inner-outer wasteland with a falcon—the intensified extension of his mental state—above his head. It is through the falcon that a change occurs. In the first grey of the dawn a flock of geese fly by. The falcon tries its luck on one of them, but only succeeds in wounding it, and three drops of blood fall down on the snow before Parzival. He contemplates this phenomenon, identifying with it so completely that he “loses his senses,” although he is actually using them with falcon-like intensity. He is now described as “in thrall to Lady Love.” The “theory” that emerges from this intense practice of delicate empiricism is the image of Condwiramurs, Parzival's wife.

But then comes a challenge from beyond his sphere of attention. Contact with the three drops of blood is broken, Lady Reason re-asserts herself, his “senses” are restored, and he is able

to engage in a joust. Having completed this task, Parzival trots back to the three drops of blood and is once again in thrall to Lady Love. Three times Parzival goes through this transition from total perceptual identification (Lady Love) to rational detachment (Lady Reason); the third time his “senses” are restored he finds himself face to face with Gawain, with whom his path towards the goal will henceforth be inextricably linked.

The story of Parzival is something of a paradigm of artistic knowledge.

The parallel in the paths of these two heroes is very striking. It would go too far to list all the details, but it can nevertheless be said that while on his parallel path to Parzival, Gawain tends to follow the dictates of his heart—he is ruled by Lady Love—whereas Parzival, despite his susceptibility to love trances, tends to be a follower of Lady Reason. All this has been set from the beginning in a symbolic context involving the polarity of black and white as contrasting yet complementary aspects of the soul. The goal is not to eliminate the one or the other, but to balance them, and the same goes for our two allegorical ladies. The processes of initiation for these two heroes are oriented, each in their specific ways, towards this goal.

The goal is not to eliminate Love or Reason, but to balance them.

In following his heart, Gawain finds himself facing a series of trials, which end in his being granted “vision” (by looking into a crystal pillar that gives him a panoramic view of everything happening for six miles around). Meanwhile Parzival, in addition to grimly seeking and accepting any contest of arms that offers itself, undergoes what nowadays would be called an extensive therapy session. In a long, difficult, and painful conversation with the hermit, Trevrizent, Parzival is brought face to face with himself, both in terms of his deeds and of his ancestral identity. He is also told much about the nature of the Grail. Surprisingly, in this story the Grail is a *stone* with properties that give it a very wide frame of historical and mythic reference.

Armed with this new knowledge, Parzival leaves Trevrizent much more at peace with himself, but still following his lonely quest.

Whereas Gawain, the “heart-knight” has acquired, through his trials, a measure of “vision,” Parzival, the “head-knight,” has acquired, through this first phase of his own initiation, a greater degree of “heart.” Both are now more balanced than they were before, and it is at this point that these two, as a result of a very elaborate train of circumstances, meet in battle. When they finally discover who it is they each have been fighting—this moment comes when Gawain is on the point of defeat—they abruptly break off the contest. Now they both express the same sentiment: “I have been fighting against myself.” From here Parzival again goes on alone, but he has now fulfilled the second stage of his own initiation: He has come to terms with, and fully integrated, the “Gawain” within himself. Thought has become permeated with feeling, and vice versa.

Now he is ready for the next stage—yet another battle, this time against a figure who bears all the marks of a much more profound layer of the human soul than Gawain. This next character is an image of polarity, but one in which the poles abut each other in stark contrast, for his skin is both black and white. His dark armor is studded with jewels of many colors, as is his sword and the apparel of his horse. He is the commander of a vast army composed of men from 25 different peoples (of Africa!). If ever there was a consciously constructed image of the naked, dynamically polarized power of the human will, this surely must be it. This is Feirefiz, Parzival’s half-brother, and it is the “Feirefiz” within himself that Parzival is now called upon to master. Once again both knights utter the same symbolic formula: “It is against myself I have been fighting.” Parzival does not defeat Feirefiz, but certainly proves himself his equal.

Gawain, the “heart-knight,” acquired a measure of “vision;” Parzival, the “head-knight,” acquired a greater degree of “heart.”

The battle with Feirefiz is brought to an end when Parzival’s sword breaks. This actually signals the end of his career as a knight, and he has in fact come to a kind of still point. He remains entirely in the dark as regards any outcome of his quest, but in mind, heart, and the depths of his will he seems at peace with himself. Only now, with this “integration of the personality,” is he called to the Grail castle, and the great consummation of the narrative unfolds.

Despite this consummation, however, the central focus of the narrative, namely the Grail, remains as much a mystery as it ever was. We have gleaned more *information* about it along the way, but this does not make its existence and its nature any less of a mystery. All along it has been the central symbol of the story, and yet at the end of the tale it still remains—a symbol.

Wolfram allows this symbol to dissolve into the natural and cosmic background out of which it first emerged. In this quality of fundamental inscrutability it merges here with what I have been saying about the quality of the Whole. The Grail, as it appears in the Parzival story, can stand, like no other I know, as a master symbol of the Whole.

In presenting this very short account of some of the salient features of this story, I have been trying to show how Parzival moves from the primary experience of the spontaneous epiphany to the mature perspective of the achieved epiphany. Each stage of this path both deepens his self-knowledge and brings him closer to knowledge of the Whole.

To experience and study the Parzival story is to have direct experience of the nature of artistic knowledge. Artistic sensibility approaches the Whole and expands the mind into the realm of Wholeness, but without delivering any analytical knowledge of it, or indeed any hope of doing so. With analytical knowledge you know *how*, whereas with artistic knowledge you simply know *that*.

We are in the realm where Lady Love—participatory imagination—holds sway, and although she cannot articulate anything without the help of Lady Reason, the latter’s sphere of influence with its tendency towards abstraction and its desire for clear definition must be held in check. In Lady Love’s realm we can have clarity *without* definition, for here the normal epistemological tables are turned, and instead of imagination eking out a meager existence along the margins of reason, we have the rational as the servant of the artistic imagination. The artistic imagination does not deal in facts but in meaningful expression experienced in the moment. To hear, read, and study a work like *Parzival* is to experience such an epistemological inversion in action.

A similar inversion is required if conventional scientific sensibility is to be transformed into artistic sensibility. The practice of what Goethe calls “delicate empiricism” is a way of doing this. On this path we may not encounter three drops of blood on snow, but if we persist we will soon come to the realization that all apparent “things,” all phenomena, are in one way or another *expressions* of the greater context in which they are embedded (ultimately the Whole). Expressed artistically, this means that all phenomena are *natural symbols*. The English poet and philosopher, S.T. Coleridge, puts it like this:

[A] Symbol is characterized by a translucence of the Special in the Individual or of the General in the Especial or of the Universal in the General. ... It always partakes of the Reality which it renders intelligible, and while it enunciates the whole, abides itself as a living part of that Unity, of which it is the representative.

“Things as representations” is a major implication of contextual thinking. There is, as Owen Barfield says, “no other thinghood.”

A style of knowledge is required that can generate knowledge of the Whole.

This translucence of the greater context within the lesser appearance seems to apply at all levels of reality. This is precisely what molecular biologists are being confronted with in their discovery of all-pervasive context-dependency. The problem is, with their seemingly unshakable allegiance to analytical reason and their use of mechanistic terminology, they do not have an epistemology (or, for that matter, a language) that can make sense of this. But if knowledge were to “take on artistic form,” for instance, by embracing such a process as is exemplified by the Parzival story, then the necessary epistemology would be in place. They would know that their desperate search for ultimate causal bits was futile, and that the path of knowledge rather lies in penetrating with the questing imagination into ever-widening contexts.

Such a change, sorely needed now, would give researchers the ears to hear what the phenomena they study are actually saying to them. If they listened we might be able to step back from the brink of a world governed by transgenic organisms, nanobots, and robotic hybrids,¹⁵ and move instead towards something more like Goethe’s “highly cultured age.”

Waldorf teachers, in becoming human beings rather than “mooncalves,” have a chance to make an essential contribution to this change, while at the same time creating schools that are “total works of art.”

ENDNOTES

- 1 “Mooncalf” is what the drunken Stephano called the man-monster Caliban in Shakespeare’s *The Tempest*.
- 2 From *Balance in Teaching*, lecture 2 (GA 302a).
- 3 It is worth noting at the outset that while the Waldorf world has done a lot of thinking, writing, and talking about making teaching artistic, it has done comparatively little in this direction in the case of knowledge.
- 4 The series can be found under the heading “Toward a biology worthy of life” on the website of The Nature Institute: natureinstitute.org. [Talbot has written for the *Research Bulletin* as well: www.waldorflibrary.org – Ed.]
- 5 Dumont, Jacques E., Frédéric Pécasse and Carine Maenhaut (2001) “Crosstalk and Specificity in Signaling: Are We Crosstalking Ourselves into General Confusion?” *Cellular Signaling*, Vol. 13, pp.457–463.
- 6 When there are so many contextually responsive variables in play, it becomes impossible in principle to predict outcomes.
- 7 The English poet, Wordsworth, spoke in this connection of “a sense sublime of something far more deeply interfused”; Freud referred to this as “the oceanic feeling.” There are probably as many names for this experience as there are writers who have spoken of it.
- 8 This term is taken from the writings of Owen Barfield (e.g., *Saving the Appearances*). He has very convincingly shown that all our normal experience is participatory, although modern consciousness has developed in such a way that we are not aware of this. The epiphany is a moment when we become directly aware of the participatory nature of our experience.
- 9 In a certain way, of course, we do do this. An intrinsic feature of the art of Waldorf pedagogy is the designing of lessons so that moments of epiphany are rendered possible. That they will actually happen is never a foregone conclusion.
- 10 Andreas Suchantke calls this “das übergeordnete Ganze” in Ch. 5 of *Metamorphose – Kunstgriff der Evolution* (Verlag Freies Geistesleben, 2002), translated as *Metamorphosis – Evolution in Action* (Adonis Press 2009).
- 11 This phrase comes in the first stanza of his poem “Entirely.”
- 12 If this seems something of a bald assertion, it receives very convincing support from an article by Henri Bortoft: “Counterfeit and Authentic Wholes” in *Goethe’s Way of Science*, ed. David Seamon and Arthur Zajonc (SUNY Press 1999).
- 13 The expression in German here is “mein Sinn,” which could be construed as something like “my own native intelligence,” but I have chosen its other meaning.
- 14 The actual spelling is “Gawan,” but I have always felt that “Gawain” sits better on the English ear.
- 15 If you would like to check out the delights that artificial intelligence has in store for us, take a look at *The Singularity Is Near* by Ray Kurzweil (Penguin 2006).

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Core Principles of Waldorf Education

A Contribution to the Study of Core Principle #6

Judy Lucas

Relationships: *Enduring human relationships between students and their teachers are essential and irreplaceable. The task of all teachers is to work with the developing individuality of each student and with each class as a whole. Truly human pedagogical relationships gain in depth and stability when they are cultivated over many years. They cannot be replaced by instructions utilizing computers or other electronic means. Healthy working relationships with parents and colleagues are also essential to the wellbeing of the class community and the school.*

Rudolf Steiner delivered a series of lectures to members of the Anthroposophical Society during February and March, 1919, in the aftermath of the Great War, in an effort to bring order out of chaos.¹ In one of those lectures he boldly stated: “People hardly know what it means to be human” (cf, p.2). Waldorf education was indeed founded with the intention of bringing social renewal and a new understanding of human existence and the social organism. At the core of this new social organism is the image of the human being (Core Principle #1) and the individual’s relationship to other human beings (Core Principle #6). Steiner addresses the development of a new kind of cognitive feeling and what it can generate in us:

It is solely by means of this feeling that spiritual science can bring us to a proper appraisal of what a human being is, to a feeling for human dignity in the context of the world. This feeling can fill our whole soul, and only if it extends to every part of our inner being can it put us in the proper mood to sort out, if need be, our relationship to another person. We can regard this as one of the first substantial achievements

of modern anthroposophically based spiritual science: a proper respect for the human element in the world. (p.3)

Steiner explains that in olden times our thoughts and actions were driven by spiritual leaders and that we were therefore joined in a spiritually driven community. Now our thoughts and actions largely come out of our own individual freedom, thus necessarily separating us one from the other. Therefore, we must consciously direct ourselves to be in community, to cultivate human relationships.

One strategy Steiner gives us towards accomplishing this is to “recognize that divine activity is at work in our neighbor” (p.12) and that we can sharpen this recognition through a specific meditation. He suggests that we take moments to reflect upon our own lives, asking ourselves how this life of ours has unfolded since childhood, noticing not so much what we ourselves have enjoyed and experienced, but rather:

the people who have entered our lives as parents, brothers and sisters, friends, teachers

and so on and, in place of ourselves, focus our attention on the inner nature of each of these people. After a while we shall come to realize how little we actually owe to ourselves and how much is due to all that has flowed into us from others. (p.13)

And further:

If a person looks again and again into his own being and recognizes the contribution which other people, perhaps long dead, or who have ceased to be close to him, have made to his life, his whole involvement with other people will become such that on forming an individual relationship with someone, an imagination of the true being of this person will arise within him. (p.13)

Steiner ends the lecture with a suggestion that the best situation arises when we learn from each other, especially inter-generationally. The youth can know that all stages of life hold treasures—perhaps a necessary, comforting thought at times—and the elders can be inspired by the youth. The class teacher’s commitment to work with a group of students over eight years, the enduring human relationship between a class of students and their class teacher, allow for an evolving, inter-generational, collective learning. When we are honest, we have to recognize that no one individual can be an expert in all of the curriculum areas covered during these eight years. Therefore, the opportunity Waldorf education provides for a teacher to stay with the class over this period of time (when possible) places a value on relationship over curriculum content. In fact, this Core Principle was inspired by Jørgen Smit’s lecture, in which he spoke about the “general stream” (the curriculum taught to everyone in the class) and the “individual

stream” of relationships with *each* student.² It is the seeing of the individual child that needs the ripening of several years, as mentioned in the body of the principle. There is an impulse for social renewal underlying Waldorf pedagogy, and this impulse can be realized only by attending to each individual as well as to the class as a whole, which can also mean the nurturing of the student-to-student relationships. This level of instruction cannot be replaced by computer instruction or other electronic means. This is what it means to be human.

For me, this is essential. In fact, one of my life’s commitments is to try to have an imagination of the true being of the “other,” of the people with whom I interact daily. In the context of education, the teacher leads the students in a process whereby they learn to bracket their own interests and identity long enough to perceive and even appreciate the interests and identities of others. We develop the students’ critical thinking to allow them to utterly open themselves to the views and needs of other human beings. By creating opportunities for students to examine their own generally unexamined assumptions, biases, and prejudices, we allow students to explore the perhaps unexamined assumptions, biases, and prejudices of others. We can then push the critical thinking, through an analytical process, to enter the realm of empathy. Students can learn to experience the feelings of other human beings; they learn to empathize.

Carl Rogers, one of the founders of the humanistic approach to psychology, identified three conditions necessary for therapeutic change: empathy, unconditional positive regard for the other, and the communication of both to the other. I suggest that we must go beyond the recognition of the importance of human relationship in education towards a *conscious cultivation* of our human relationships,

The students learn to bracket their own interests and identity long enough to perceive and appreciate the interests and identities of others.

a cultivation that includes empathy and an unconditional positive regard for the other. Steiner says, “The kind of relationship there is between one person and another, this kind of interest in things, this conscious participation in life, will be there as a matter of course in an independent organism that is on its way to becoming sound.” (p.43) A school as organism, a faculty council, even education itself, is sound inasmuch as the people involved cultivate an interest in one another.

Leading Thoughts

When I was asked to write an article on this Core Principle, I was struck by my own need for human relationships as a way to understand the need for human relationships more generally. The Pedagogical Section Council does not intend for these Core Principles to be pedantic or prescriptive but rather to be inspiring, to be leading thoughts for dynamic conversations on what is essential in Waldorf education, and to stimulate different interpretations and perspectives. Therefore, I felt the necessity to engage in my own conversations around this specific Core Principle. What follows are some leading thoughts from my community of relationships.

From a Waldorf parent: At one level, relationship in Waldorf education is a spiritual commitment, a recognition of the essential value and divinity of every single person. At a second, it is an ethical commitment to honoring each individual’s right of self-determination, combined with responsibility to the collective well-being. And at a third level, that of society, it is that responsibility to respect all of other human beings, to embrace diversity and difference of all kinds, and to work toward the good of the community and the world, in engaged citizenship. Thus relationship is at once spiritual, ethical, and social. In the realm of education, it is preparation of Waldorf students with very real-world dispositions and skills: the ability to think critically

about different perspectives, including one’s own; the ability to work with others, all others, in teamwork situations; the ability to solve complex real-world problems, all of which include human relationship; and the ability to think and act inclusively, which is an essential skill in a global world.

A colleague of mine, a teacher at the Denver Waldorf School, spoke of his own curiosity to understand the people behind world events and to shed light on these individuals in his classes. Who was Rosa Parks? Why did she refuse to surrender her seat to a white person? Was this an impulse of the moment, or the consequence of fatigue, or a well-laid plan? My colleague asks me, when we say, “The South segregated black people,” who do we mean by “the South”? When we look at an atomic clock and try to understand how it works, can we also try to understand a little about Isidor Rabi, a physics professor at Columbia University, who suggested that a clock could be made from a technique he developed in the 1930s called atomic beam magnetic resonance.

When visiting a sister Waldorf school on behalf of the Pedagogical Section Council, I guided the staff, and then the board members, in a collaborative discussion on the Core Principles. They have continued to study these core principles, since my visit, together as a school community. Here are some of the comments that I have heard from these groups:

- The position of teachers, having authority and guidance, is all too often taken away by the use of technology.
- Important in our Waldorf schools is the human relationships of class teachers to subject teachers as they work together to meet the needs of the children.
- We bring depth to our teaching when we do a child study as a faculty, and we can then place the child within a whole context.

- Human relationships create possibilities for children to take risks.
- We as teachers and staff must invest in relationships with parents, establish an open rapport, and provide a picture of what's happening in class with their children.
- This principle is what brought us to the school.
- Our roles as teachers, parents, and board members are really to model healthy relationships and communication and how to work through conflict in a positive and respectful way.
- Our graduates are good at, and open to, relationships.

In my inquiry into how others perceive the importance of human relationship to Waldorf education, I came across an article by Craig Holdrege entitled “Reality-Based Education in a Hyper-real Culture,”³ in which he talks about “commanding presences,” a term coined by Albert Borgmann. In his article, Holdrege talks of commanding or genuine presences “as characterizing the real—when you perceive that something is rooted in a larger context of which it is revelatory.” He gives an example: “A leaf in the fall, loosed from its tree and floating through the air, is revelatory of the whole context of wind and temperature at that moment.” He goes on to raise the question:

[H]ow do we orchestrate or facilitate experiences with commanding presences today for children in education? Because we all know and perceive how today, from an early age on, the experience of children is often mediated through so many gadgets and devices. We really need to concentrate, then, on how we can help children still come into contact with commanding presences. How could we make that the main focus of their existence for the first 10 or 12 years of their lives?

It would mean that school would have to become very different in our technological age

and less what we typically imagine school to be. Tests would have to go away; 45-minute periods would have to go away. Meeting with people, meeting with nature, meeting through meaningful work in the world, such as gardening—all of that would become the heart of education.

Why? Because the commanding presences give us roots in the world and help form the way we think about the world. They are in the best sense of the word formative and can inform our being. If there is to be a future in which human beings form ideas that are rooted in reality, it will be in part because they've been allowed to participate in commanding presences as children. And they will have experienced that reality is relational, that as a person you are active and you are being acted upon by commanding presences.

“Have Courage for the Truth”

Steiner, in the lecture cycle mentioned repeatedly, develops an understanding of what he calls the Threefold Social Organism. He begins the lecture by explaining that “it is people's soul needs which cause them to seek each other out, and it is these similar soul needs which unite them. Education, too, means that one person cares for another in the realm of the inner life.” (pp.45–46) And then:

What human beings shall gradually acquire through working with spiritual science [for instance, in Waldorf education] is an awareness that every human relationship is inwardly related to the whole of humanity and to the wider world. (p.54)

Steiner then describes that in our striving towards human collaboration, we can find two different paths, the thinking path and the willing path, both of which are important as we engage socially. We can find our way to human collaboration through a *thinking* path in this way:

We must strive for the mental honesty—pluck up the courage to be able to admit it, in utter sincerity, that ... we are not born free from prejudice where our world of thought is concerned; we are all born with certain prejudices. (p.59)

He goes on to explain that, though we are born with prejudices, we can become reborn out of the thoughts of others with a comprehensive feeling in our own thoughts. We can choose to embrace a collective thinking. He adds:

It must become a serious part of our lives to educate ourselves to acquire a sense for considering other peoples' thoughts, and to correct bias in ourselves through conversations with others." (p.63)

When I can stop thinking that I myself am the sole source of everything I think and recognize in my innermost soul that I am a part of humanity, then I have found the path to human collaboration.

When we bridle our impulse to share our own thoughts in a faculty council and instead take a moment to listen deeply to what is being said, when we begin a meeting with parents by allowing them to speak from their hearts while we listen to them with deep concern and interest, when we work with our colleagues to build a picture of the child from many perspectives, when we allow a high school student to lead a review or present new material in class, then we are truly able to "enquire into the path of thought which consists in acquiring tolerance of mind for the opinions of mankind in general, and developing a social interest in the thoughts of others." (p.63) We can model this state of mind and heart for our students, leading them in their own interactions to the thought that it is not only acceptable for them to have different opinions, but desirable. As an administrator I

As an administrator I came to love the ability within a Waldorf setting to allow for social conflict; I was challenged to normalize, not remove, conflict.

came to love the ability within a Waldorf setting to allow for social conflict, to allow students a chance to become really angry. I was challenged to normalize, not remove, conflict. Yes, when the conflict becomes severe it is the task of the adults to intervene, but not with the intention of ending conflict. Instead, the task is to allow the students to express their differences in a heartfelt manner, then to ponder the differences of opinions, then to value those differences. In this

way, we lead the students towards a connection to the other, towards an overcoming of individual bias, towards a healthy social organism, out of the "chaos of war" in which they are living.

On other occasions, when high school students would come to me enraged over a rule they felt to be arbitrary, I felt challenged to understand how they felt about the rule, why they did not

understand it or feel they could abide by it.

And through an understanding of the students' perspective, I could then either explain the rule in a way that would make sense to them, and therefore allow a conformity to the rule, or I could go back to the high school teachers and advocate for a process to either remove the rule or modify it.

"Imbue Thyself with the Power of Imagination"

A second way to the human collaboration is through willing, which Steiner describes as an acquired idealism and enthusiasm, or the ability

to acquire the kind of idealism that does not spring merely from the blood and youthful enthusiasm, but is acquired out of our own initiative...the kind which springs from taking hold of the life of the spirit, and which can be rekindled afresh again and again because we have made it part of our soul independently of our bodily existence. (p.63)

When we offer fairy tales and Aesop's fables without the moral, simply allowing the student to live deeply with awe into the magic of the story, then we are educating the student towards an acquired idealism and enthusiasm. In the grades, when a child begins to learn the laws of mathematics, the orderliness and beauty of multiplication leading into geometry, the enduring truths of mathematics, they are filled with an imagination of the infinite, which they will later explore further in projective geometry. When we allow the students to discover what happens when an electric current passes through a coil rather than tell them first and only demonstrate it as evidence for the theory, students uncover for themselves an abiding belief in truth.

If you enquire into the path of the will, you will not hear of something abstract but of the need to educate yourself in idealism. And if you cultivate this idealism or, which is particularly necessary, you introduce it into the education of growing children, a sense will awaken for acting out of the spirit; out of this idealism will come impulses to do more than one is pushed into doing from outside. (p.63)

"Sharpen Thy Feeling for Responsibility of Soul"

And now we can find a third path, through feeling, through a sensing of what is needed. Out of this idealism will come impulses to do more than one is pushed into doing from outside oneself. When the teacher guides the students, through relationship, to recognize their biases and begin to shed them and to acquire idealism through the uncovering of truth and beauty, the students can begin to recognize the need to become active members of a growing, healthy social organism and to be responsible for the development of this same organism.

Out of a thinking which is intrinsically tolerant and interested in the thoughts of others, and out of a will reborn through acquiring idealism, something arises that cannot be called anything else but a heightened feeling of responsibility for everything you do. (p.65)

In a Waldorf school, we teach reading, writing, and arithmetic, but we use these three Rs as tools to uncover three more essential Rs: rhythm, ritual, and reverence. Through the rhythm and cadences of iambic pentameter in recited verses, or the bouncing of the ball to the times tables, or the daily, weekly, seasonal, and yearly rhythms we establish, and through

the observation of these natural rhythms, we allow our students to see themselves integrally connected to the world of nature around them. "Everything that speaks to us from the various kingdoms of nature, if we contemplate all this in the light of anthroposophically based spiritual science we find that in

one way or another it is connected with the human being." (p.4) The establishment of ritual in a classroom, the speaking of a morning verse followed by birthday verses and an exercise in eurythmy, for example, establishes the student in relationship to the class of students. Through an understanding of the student as a human being and a further understanding of students in relation to others in a classroom and a ritualistic order defining these relationships, we enable students to "attain a living relationship between ourselves as human beings and the whole of the rest of the world." (p.5) And through deeply rooted rhythms and carefully established social rituals, students are led to an idealistic enthusiasm for the divine, a reverence for the mystery, and a "direct presence of the spirit, the active power of the spirit." (p.5) In the words of Emerson, "Every spirit builds itself a house; and beyond its house, a world; and beyond its world,

The world that Steiner invites us to fashion is intended to create true spiritual harmony, real spiritual collaboration.

a heaven. Know then, that the world exists for you: Build therefore, your own world.”

The world that Steiner invites us to fashion is intended to create true spiritual harmony, real spiritual collaboration. This world can in fact be an ordering of our current chaos. “We must not take an exclusively pessimistic view of the present time; we can also draw from it the strength to achieve a kind of vindication of contemporary existence.” (p.89) This world is not possible without humans in relationship with one another. While the metaphor of a chain link fence may seem overused, it is in fact an essential picture of social harmony. Each link in the chain must have its own individual integrity, and the integrity of the chain is dependent on each of the links. Likewise, each link, no matter how strong, cannot fulfill the intention of a chain without being linked to the others. As educators we need to respond “to the clear pointer calling us to play our part in social healing” (p.89), and that this is done through human relationship.

I end with our well-loved verse:

The healing social life is found only
When, in the mirror of each soul,
The whole community finds its reflection
And when, in the whole community,
The virtue of each one is living.

Judy Lucas is currently training in Rhythmical Massage Therapy as indicated by Ita Wegman, MD, and Margareta Hauchska, MD. Before that she was the administrative director at The Denver Waldorf School for twelve years and also served as office manager, enrollment director and part-time high school language arts teacher. She received her Waldorf teacher training at Rudolf Steiner College. She serves on the Board of Trustees for the Association of Waldorf Schools of North America (AWSNA) and has served on the Pedagogical Section Council of the School for Spiritual Science since 2008.

ENDNOTES

- 1 Rudolf Steiner. (2001) *The esoteric aspect of the social question*. London: Rudolf Steiner Press.
- 2 Jørgen Smit. (1992) *The child, the teachers, and the community*, lecture 2. Spring Valley, NY: Mercury Press.
- 3 Craig Holdrege, *Reality-based education in a hyper-real culture*, available at: natureinstitute.org/txt/ch/techno-utopia.htm

A Contribution to the Study of Core Principle #7

Frances Vig

Spiritual Orientation: *In order to cultivate the imaginations, inspirations, and intuitions needed for their work, Rudolf Steiner gave the teachers an abundance of guidance for developing an inner, meditative life. This guidance includes individual professional meditations and an imagination of the circle of teachers forming an organ of spiritual perception. Faculty and individual study, artistic activity, and research form additional facets of ongoing professional development.*

As part of my work in the Chicago Waldorf high school, I teach the history of architecture in 12th grade. Although I revise my approach each year according to the class I will be teaching, in recent years I have consistently opened the block by asking the students to look at our rented school building from a different perspective. By examining the physical structure and thinking about the design process, they are asked to consider what ideas the architect had about the human beings who would work in that space and the children who would receive their education there.

As the students consider each room and the connecting corridors and stairways, the thinking behind the design of this particular building becomes increasingly apparent.

The architect was bodying forth the ideas about children and their education that the community held at that time. The students quickly discern that the ideas behind Waldorf

education are quite different and that, ideally, the structure housing it requires a different form.

They come to realize that we are surrounded by the results of people's ideas expressed as materialized thoughts, whether in the visible design of homes, factories, hospitals, and prisons or the invisible structure of laws, regulations, and conventions. It is a small step for them to

consider which ideas about the nature of the human being are implicit in both the visible and invisible spaces that we create and what their effects are on us.

The thought that these materialized forms were shaped by other human beings working within a specific context gives us the possibility to make changes out of our own context. As you can imagine, this possibility dramatically affects the quality of our class discussions. Exercising the ability to "read" the consciousness expressed through the architecture of the past and appreciating our inheritance become part of the journey the students experience, but what often intrigues them most is to look at current issues in the world and to find out how social change

can be affected by the quality of the spaces we create. How are human beings responding to their surroundings in our time? The intentions that shape design become the focus of discussion and lead the students

to think about the needs of the future they are approaching. How will they respond?

In the final block of 12th grade, we pick up this theme again when the students have an opportunity to review their education. They re-member their experiences by drawing images arising from their early childhood and from key moments in grade school. Looking at the

We are surrounded by the results of people's ideas expressed as materialized thoughts.

murals they have created encourages all sorts of anecdotes and memories to surface. The ensuing discussions between those who have been in the school since the parent–tot stage and those who arrived later are richly peppered with stories—some of them funny, others sad—that reveal just how much children notice about their surroundings: details of the physical space, but also details of the soul space. These memories and the sharing of experiences, combined with time spent in early childhood and grade school classes, provoke many questions that become the content of the block.

Each year the intention behind the shaping of our school, as a faculty of teachers and administrative staff, becomes tangible in the questions and comments of the students. It is not always as delightful as we might wish. They have been educated to be perceptive, thoughtful, and articulate—and they are. It’s interesting to hear what they have observed and what they think. I often feel that I am seeing their soul experience of what we as a faculty have formed out of our individual commitment and collective collaboration. What is this commitment? And what is the foundation for our collaborative research? How might we be different from any other intentional community with a common vision?

I am reminded of an anecdote told to me by a parent some years ago prior to the opening of our high school. Her son was a delightfully challenging student in the grade school, skilled in asking provocative questions and keeping us on our toes. A few years after leaving the grade school, he was discussing his future with his mother. When she asked what he wanted to do after college, he responded, “I don’t know what I want to do, but I do know what I want to be. I want to be successful.” When asked what success meant, his response was, “I want to be successful like the Waldorf teachers. They are all really different from one another, but they figure out how to get along and work together for us.

There’s something they have, but I don’t know what it is.”

As his teachers we were, to say the least, rather astonished, delighted, and intrigued to hear this comment, as was his mother! What does this point to?

I think he was sensing the emerging intentional community that develops through the individual meditative practice of the colleagues, the forming and working out of shared agreements, shared study and artistic practice, on-going professional development, all in a context of the power of an awakening love for the incarnating human being.

When I consider the comments of students, my thoughts turn to what is called the “College Imagination.” I am mindful of the fact that all the members of a faculty—teachers and administrative staff alike—can be engaged in the activity described in this imagination. The picture of adults forming a chalice out of the power of their individual meditative striving, of the cup being woven out of a selfless sharing of each one’s strengths and the heightened awareness that can allow a different quality of insight, is potent. I see the question of spiritual orientation as an essential element in the strengthening of the “vessel activity” that can generate the imaginations, inspirations, and intuitions needed for the work. Surely the question is not a simple *if* but *how* we participate in this work together. Roberto Trostli’s article in the PSC publication, *Creating a Chalice of Collaborative Spiritual Leadership*, addresses the work that can arise when this imagination is active in a school. [This article is also available in two parts in the *Research Bulletin*, Vol. 16 #2, and Vol. 17 #1 – Ed.]

From a soul perspective both teaching and parenting are “athletic” activities. One parent, at the end of the 12th grade year, described the experience as a certain culmination of a personal Long March, and he expressed a deep appreciation for the experience of working for 14 years with the changing constellation of teachers.

Looking back, he could see how the content of the curriculum and the style of approach taken by the teachers had an emerging coherence full of meaning for students and parents alike.

Despite the discussions we have about the right language for communicating Waldorf education, I think that the most effective language in any human encounter is that which arises when we are actively present, exercising a profound listening and speaking out of our experience and understanding. It seems to me that we are effective to the degree that we understand the work of our colleagues in different subjects and levels and the role that they play in engaging the developmental curriculum. I think that we will find the language we need in each encounter when, as colleagues, we actively and authentically awaken the process of becoming a Waldorf school.

As teachers and administrators we know that what we do and how we work together is highly formative. When we take a position as teachers in a Waldorf school we are making a professional commitment that asks us to develop beyond our own personal inclinations without relinquishing our integrity. In the first lecture of *Study of Man* (CW 293), Rudolf Steiner speaks of the deep relationship that forms between teacher and students when that teacher concerns herself with thoughts about the spiritual nature of the evolving human being. This relationship also has the effect of helping us overcome our own individual one-sidedness and personal inclinations and encourages us to be more aware and attentive.

While Steiner is focused here on the student-teacher relationships, this also has a profound effect on all relationships in the school. What

does it mean for us to concern ourselves with thoughts of a spiritual nature about the evolving human being? It is a commitment to research and explore Steiner's thinking about the nature and development of the students who are placed in our care. Steiner was even more explicit about the importance of the teachers' meditative work in subsequent years. He was clearly expecting the teachers to take up what he was giving

them not as mere information, but as themes for meditative contemplation. The Core Principles have been formed to support us in this work.

I experience the seventh principle addressing spiritual orientation as a remarkable invitation to become more authentically ourselves

as individuals as we engage in becoming contemporary researchers of the path to incarnation of the human spirit. Each of us brings significant strengths as well as real challenges to our work. But we do not work in isolation. As Waldorf teachers and administrators, we have

the remarkable opportunity—the responsibility, in fact—to share our work with one another, learning from the variety of approaches, successes, and failures that we experience. We have the responsibility to develop honest relationships between us, with all the difficulties that this can entail. We organize the

daily life of running a school through shared agreements. All of this requires us to make commitments. These elements are part of the soul and spiritual architecture of our schools. These structures are the context for the students' experience of their education and will have a formative effect. As we live our commitments and agreements, day by day, we have the opportunity to model what it means to be in relationships that can develop. This process needs time—

Steiner was expecting the teachers to take up what he was giving them not merely as information, but as meditations.

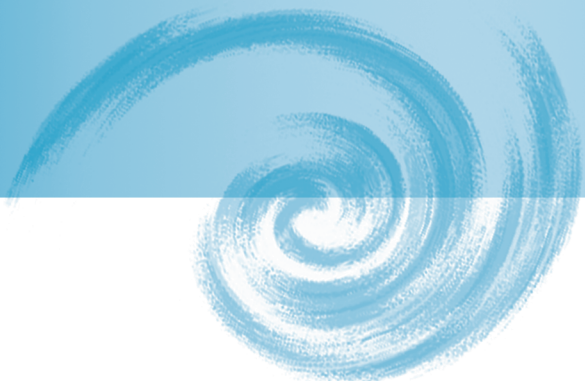
As teachers in a Waldorf school we have to develop beyond our own personal inclinations without relinquishing our integrity.

not too much, but enough. We can revisit our agreements when needed and exercise the kind of responsible innovation that requires dialog.

In an increasingly splintered and time-squeezed world, as described by some of our students, we can give them the soul space in which to breathe, and we can model for them an experience of relationship-building that the children and youth so sorely need. I often think about the freedom we have and wonder whether we are using that freedom to be as truly innovative as our times and the needs of our students are asking us to be. We have been given the gift of this work; what do we choose to do with it? And how do we shape it to meet the emerging future? It really is up to us.

Frances Vig, born and educated in England, is one of the founding members of the Chicago Waldorf School, where she has taken two classes grades one through eight as well as being a subject teacher in the arts. She is currently a class advisor and high school teacher focusing on the sculptural arts and metalwork. A member of CWS's College of Teachers, Frances has worked in teacher development, served as College chair and as a member of the Board of Trustees. She also teaches in various anthroposophical conferences and adult trainings programs across North America, including the Arcturus Rudolf Steiner Education Program, of which she is a core faculty member. Frances is a member of the Pedagogical Section Council of North America, which she represents on the Leadership Council of AWSNA; she is also a member-at-large of the Teacher Education Network of AWSNA.

**Are we using the freedom we have
to be as innovative as our times
and the needs of our students are
asking of us?**



Report from the Online Waldorf Library

Marianne Alsop

The Online Waldorf Library continued its growth and expansion throughout 2015, and we look forward to a busy and productive year ahead! Our focus on providing articles and eBooks translated into Spanish continues with five new articles added in the past few months: “Desarrollo Acelerado y con Retraso” by Renate Long-Briepohl; “El Sujeto, el Predicado y el Objeto en la Gramática” by Jørgen Smit; “Aspectos Fundamentales del Programa Waldorf para la Educación Infantil” by Susan Howard; “Cómo Enseñar a Nuestros Niños a Escribir, Leer y Deletrear” by Dr. Susan Johnson; and “La Enseñanza de la Escritura” by Eileen Hutchins.

New eBooks in Spanish include *Para los Niños del Mundo (For the Children of the World)* a title from the Waldorf Early Childhood Association, *Y se Hizo la Luz (And There Was Light)* and *Hermano Francisco (Brother Francis)* by Jakob Streit, and *Inteligencia Desarrollada por la Voluntad (Will Developed Intelligence)* by Patricia Livingston and David Mitchell, translated by Real Academia Española.

Recently added eBooks in English include *Chemistry Reader, An Orientation to Developing Chemistry Instruction in Waldorf Schools* by Dr. Dirk Rohde; three eBooks by R.C. Oelhaf specific to high school sciences and math: *A Waldorf High School Chemistry Program*, *A Waldorf High School Mathematics Program* and *A Waldorf High School Physics Program*; *The Children of Cyclops*, *The Influences of Television Viewing on the Human Brain* by Keith Buzzell; *Journey to the Promised Land* and *Liputto* by Jakob Streit; *Space and Counterspace: An Introduction to Modern Geometry* by Louis Locher-Ernst; *The Alpha Beta Book* by Keith McCrary; *The Art of Administration*

edited by David Mitchell; *Economic Explorations*, *A Handbook for Waldorf Schools* edited by David Mitchell and David Alsop; and *Finding Your Self* by Torin Finser. In addition we have added a series of early readers for school-aged children: *As My Heart Awakens*, *Fee Fi Fo Fum*, *Snip Snap Snout*, *When I Hear My Heart Wonder*, and *Sun So Hot I Froze to Death* all by Arthur M. Pittis.

Looking ahead, we plan to add audio downloads of lectures, and in keeping with our policy, all audio resources will be available for free.

In 2015, even though we worked at minimal capacity for a number of weeks due to moving our site to a more secure format, the OWL received nearly 100,000 visitors. Research questions and comments are always welcomed!

Visit the
Online Waldorf Library
at
www.waldorflibrary.org

Report from Waldorf Publications

Patrice Maynard

Thanks to the financial support of the Waldorf Curriculum Fund, the Research Institute for Waldorf Education, RIWE, is expanding its scope of activities. This spring will mark the publishing of our first audio book, available through our Online Waldorf Library (OWL). *Assessment for Learning in Waldorf Classrooms* by Sara Ciborski and Helen-Ann Ireland will be our first accomplishment in this medium. Academica Press gave us immediate and enthusiastic permission to transform the book into this audio format. Many more will follow.

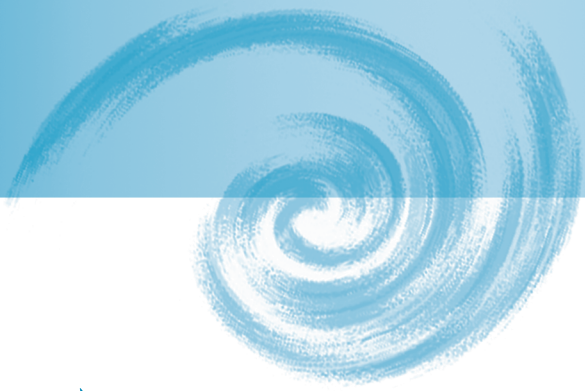
With the growing interest in Waldorf education burgeoning in Asia, the Research Institute is preparing to make books and resources available to our colleagues in China through translated books on the OWL. SteinerBooks has generously granted permission for books by Rudolf Steiner on Waldorf education, already translated into Mandarin but not publishable in China, to be included in those offerings. Books from Waldorf Publications will also be translated into Mandarin over the next few years and made available on the OWL. These teaching resources are much needed in China, and RIWE is very grateful for a special gift from the Waldorf Curriculum Fund that will make this important work available to Chinese colleagues. Translators in Beijing are especially eager to make as many resources available as possible.

Resources in the language of Lakota will also be published by next autumn. Verses and stories told at the Lakota Waldorf School will be available in English and the Lakota language with pronunciation guides to make it possible for class teachers in North America to offer their students authentic literature from the Plains Native

Americans. A children's story about contemporary life on the Pine Ridge Reservation in South Dakota may also be published in both Lakota and English during this calendar year.

The Avalon Initiative, a project of RIWE, has engaged in public discourse disseminating ideas through collaboration with thought leaders from the public school sector in New York. The third annual conference to be hosted by the Avalon Initiative will be held in Red Hook, New York, in April, and will have as its theme the need for relationship-based education—children relating to teachers instead of to “artificial intelligence mentors” as is proposed by the federal government for the near future.

All of these undertakings to expand the offerings to colleagues around the world in new, more accessible formats, and to provide leadership concerning educational imaginations are in addition to the ongoing work of the Research Institute and Waldorf Publications. The *Research Bulletin*, research on Waldorf graduates, Teaching Sensible Science courses for practicing teachers, the posting of relevant recent research on the RIWE website, the continued expansion of the OWL's collection of eBooks (a growing number of them in Spanish as well), the international collaborations on Waldorf education and the resources to support it, and research underscoring the efficacy of Rudolf Steiner's indications are all being continued with robust energy.



Research Opportunities

Teachers are invited to participate in a couple of research projects currently underway. The first invitation comes from Patrick Wakeford-Evans, long-time teacher at Rudolf Steiner College, who writes:

Please join my study exploring peak experiences in teachers during learning encounters with children. This phenomenon has been studied in artists, athletes, and musicians, but rarely among teachers. We all know that the meaningful encounters we have with children sustain us, as teachers, and give our lives meaning. I hope you will participate in this study, which is the basis for my doctoral dissertation. Follow the link below to my research website.

https://www.taskstream.com/ts/manager61/pwe_phd.

The second is a project sponsored by the Research Institute for Waldorf Education (RIWE) and coordinated by Elan Leibner, editor of RIWE's *Research Bulletin*:

Entitled "ActionWave" this project is an investigation of a method for creating systematic, rhythmic intervals of (intensity-modulated) activity and recovery, based on the research of cardiovascular surgeon Irving Dardik. In the context of Waldorf education, this project will attempt to codify "breathing" in the classroom through sequences of mostly higher-than-average-intensity action, followed by complete recovery. The first phase of the study has returned largely positive results, and we are looking to enlarge the number of teachers willing to try this methodology in their classrooms. Modest stipends are available for teachers participating in this research. For more information, contact Elan at:

waldorfresearchbulletin@gmail.com.

About the Research Institute for Waldorf Education

The Research Institute for Waldorf Education (RIWE), founded in 1996 in order to deepen and enhance the quality of Waldorf education, engages in sustained dialogue with the wider educational-cultural community and supports research to serve a wide range of educators in their work with children and adolescents.

The Research Institute supports projects dealing with essential contemporary educational issues such as computers and the effects of media on children, alternatives to standardized testing, physical health and psychological wellbeing of students, science teaching with a phenomenological approach, the role of the arts in education, and the philosophical underpinnings of Waldorf education.

As a sponsor of colloquia and conferences, the Research Institute brings together educators, psychologists, physicians, and social scientists for discussions on current issues related to education. RIWE publishes a *Research Bulletin* twice a year and prepares educational resources, including collections of eBooks and articles (a growing number of them newly translated into Spanish). Many of these publications are available without charge on the website of the Online Waldorf Library (OWL), a virtual library created and managed by the Research Institute: www.waldorflibrary.org.

In 2013 the Research Institute took over the publications arm of the Association of Waldorf Schools of North America (AWSNA) and re-branded it as Waldorf Publications. It includes resources for teachers and administrators, readers and children's books, collections of plays and poetry, science materials and kits, science and math newsletters, inspirational essays, proceedings of colloquia, and a range of publicity materials about Waldorf education. It also carries

books published by the Waldorf Early Childhood Association of North America (WECAN) and the Pedagogical Section Council (PSC) of the School for Spiritual Science, as well as AWSNA's twice-yearly magazine *Renewal*.

As an initiative working on behalf of the Waldorf movement, the Research Institute receives support and guidance from the PSC and financial support through the following organizations:

- Astoria-Stiftung
- Foundation for Rudolf Steiner Books
- Freunde der Erziehungskunst
- Marshall and Margharite McComb Foundation
- Rudolf and Clara Kreutzer-Stiftung
- Rudolf Steiner Charitable Trust
- Sprout Foundation
- Waldorf Curriculum Fund
- Waldorf Educational Foundation
- Waldorf-Stiftung

The Research Institute is a tax-exempt organization and accepts contributions through its annual giving campaign and special appeals.

Summary of Activities Supported by the Research Institute

AVALON INITIATIVE

A think tank for questions of freedom in education

COLLOQUIA (with published proceedings) on teaching:

Chemistry
Computer and Information Technology
English
Life Sciences and Environmental Studies
Mathematics
Physical Sciences
U.S. History
World History: Symptomatology

ONLINE WALDORF LIBRARY (OWL)

Over 2000 articles and 700 book titles

RECENT RESEARCH PROJECTS

ActionWave study
Alternatives to Standardized Assessment
Computer Technology in Waldorf Schools
Human Sexuality Curriculum
Survey of Waldorf Graduates
Waldorf High School Curriculum Research Projects

RESEARCH BULLETIN

Two issues per year of essays, articles, reviews, and commentaries on educational themes

RETREATS OF THE RESEARCH INSTITUTE

Presentations and discussions exploring contemporary questions related to education

RIWE WEBSITE

Collections of articles and news features on current educational issues

TEACHING SENSIBLE SCIENCE

Three one-week courses on teaching science in elementary grades using a phenomenological approach

WALDORF PUBLICATIONS

Over 400 book titles, plus science kits, publicity materials on Waldorf education

Research Bulletin

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